USDA soil survey maps were useful for locating streams of all orders but were less productive in plotting bay/basin features. Ground examination demonstrated that many bay/basin features were not represented on the available maps. The result was that many of the strata identifications had to be adjusted in the field.

The surface area of all land in each of the ten classifications was calculated using a polar planimeter and a random number generator was used to select a 5% sample of each strata for testing. Appendix II provides the technical data utilized to generate the strata and the sample and Figure 12 shows the sample areas which were subjected to subsurface testing. Appropriate locations within the sampled woodlots were then subjected to subsurface excavation. A total of 56 one-by-one meter test units were excavated to complete the sample.

In addition to the sample subsurface testing, intensive testing was undertaken at two bay/basin features. This intensive testing was undertaken to provide more complete information on the types of archaeological and paleoenvironmental data present at the bay/basin features which are frequent in the Blackbird area. A "wet" bay/basin feature with standing water and a plowed "dry" bay/basin feature were tested with one meter units, two meter units, strata cuts, augering, and pollen coring.

RESULTS

The presentation of the results of the survey will be divided into three parts. First, the results of the general surface and subsurface testing will be noted. Second, the results of the intensive testing of archaeological sites associated two bay/basin features in the Blackbird area will be presented. Finally, results of the specific survey of standing structures and other potential historic archaeological sites will be presented.

GENERAL SURVEY RESULTS

The results of the general survey will be presented for each area. Maps of site locations, tables of locational data, tables of cultural historical data, and summary discussions of some of the more interesting sites will be presented. Appendix III provides a detailed description of the site attributes recorded and listed in the summary tables.

St. Georges Area. Figure 13 shows the archaeological sites recorded and the subareas noted in the St. Georges Area. Locational attributes of the sites are listed in Table 2 and cultural historical data are listed in Table 3. This area as initially defined was bounded by Rt. 72 on the north, U.S. Rt. 13 on the west, Cox Neck Lane on the south, and an arbitrary line east of New Castle 378 on the east. Each of the defined sub-areas and its sites are discussed below.

FIGURE 12
Sample Areas – Blackbird Study Area

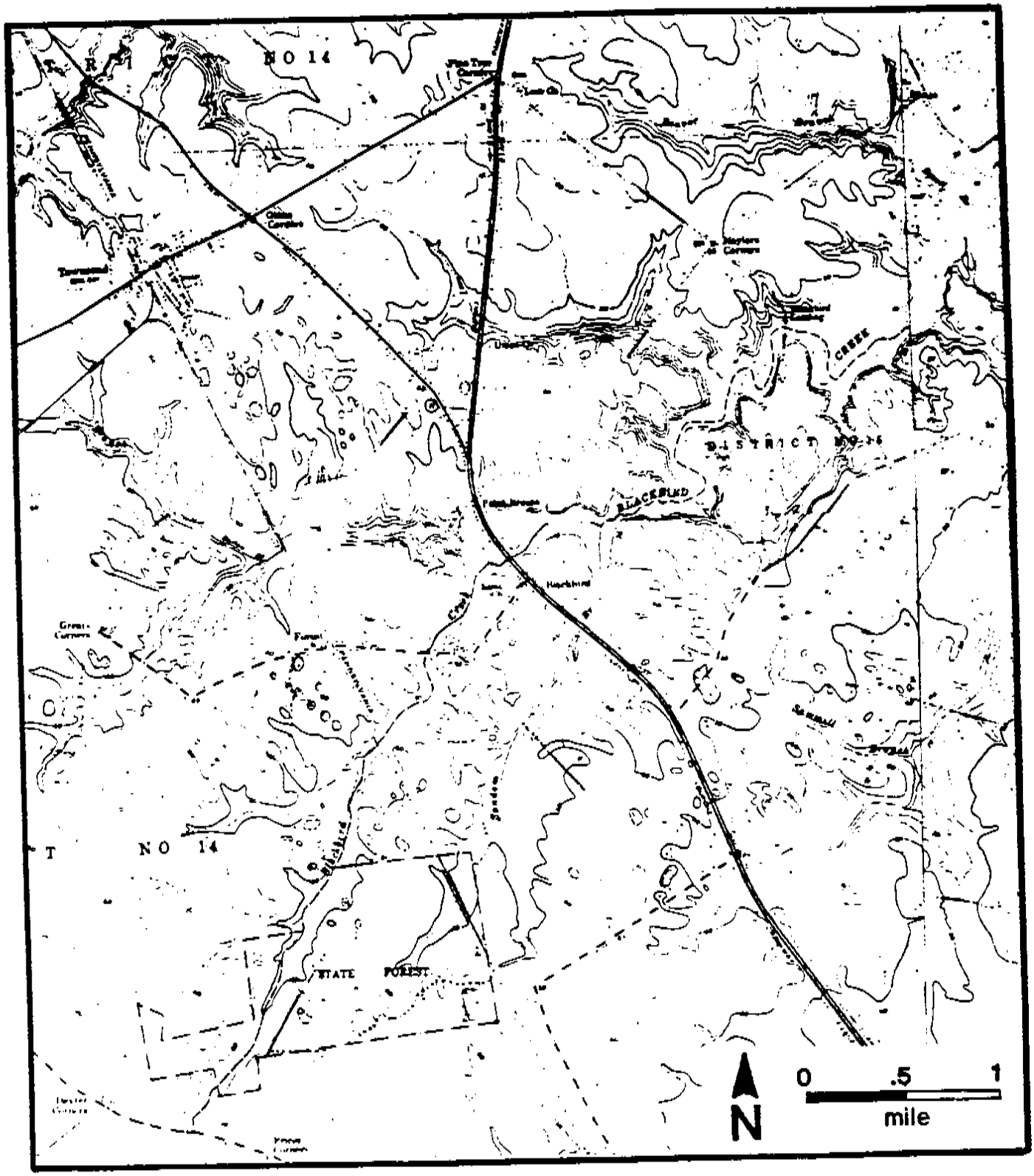


FIGURE 13
Sites and Subareas – St. Georges Study Area

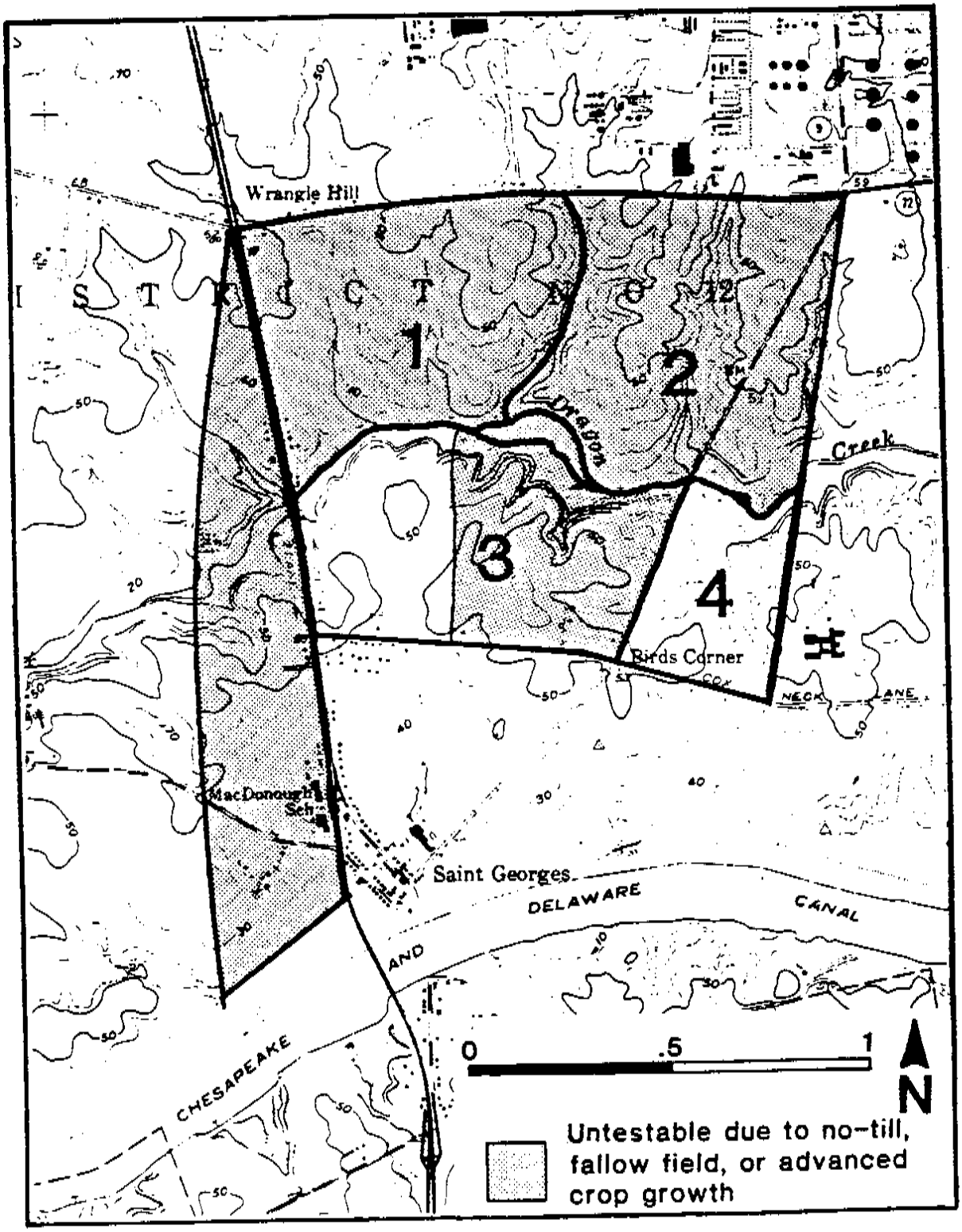


TABLE 2: LOCATIONAL DATA - ST. GEORGES STUDY AREA

SITE NUMBER	CRS NUMBER	USGS QUAD NAME	UTM NORTH	UTM EAST	GEOMORPHOLOGICAL SETTING	PRIMARY SOIL SERIES	SECONDARY SOIL SERIES	DRAINAGE	SURFACE WATER SETTING	CONF.	WATER DISTANCE (METERS)	SLOPE	ASPECT	ELEVATION
7NC-G-93	N9670	ST. GEORGE	4379800	444350	HEADLAND	MeB2	MeC2	DRAGON CREEK	STREAM	N	61	2	NE	12
7NC-G-94	N9671	ST. GEORGE	4379990	444150	HEADLAND	MeB2	MeC2	DRAGON CREEK	STREAM	N	122	2	N	15
7NC-G-95	N9672	ST. GEORGE	4380110	444040	HEADLAND	MeC2	MeD2	DRAGON CREEK	STREAM	Y	61	3	N	12
7NC-G-96	N9673	ST. GEORGE	4379900	444030	HEADLAND	MeD2	MeE2	DRAGON CREEK	STREAM	N	244	2	NW	14
7NC-G-97	N9674	ST. GEORGE	4379890	444680	HEADLAND	MeC2	MeB2	DRAGON CREEK	STREAM	N	18	5	W	6
7NC-G-98	N9675	ST. GEORGE	4379630	445230	HEADLAND	MeC2		DRAGON CREEK	STREAM	N	0	5	N	6
7NC-G-99	N9676	ST. GEORGE	4379300	445200	HEADLAND	MeB2		DRAGON CREEK	STREAM	N	30	2	N	15
7NC-G-99	N9676	ST. GEORGE	4379400	445300	HEADLAND	MeB2		DRAGON CREEK	STREAM	N	130	2	N	15

TABLE 3: CULTURAL-HISTORICAL DATA - ST. GEORGES STUDY AREA

SITE NUMBER	PALEO	ARCHAIC	WOODLAND I	WOODLAND II	CF	BL	WN	CA	WA	DA	DF	SC	MG	HISTORIC	BIFACE	SCRAPER	FLAKE TOOL	CORE	FLAKES	GROUND STONE TOOL	FOR CERAMICS
7NC-G-93																	Y		Y	Y	
7NC-G-94			Y																Y		Y
7NC-G-95																			Y		
7NC-G-96																		Y	Y		
7NC-G-97															Y				Y		
7NC-G-98			Y												Y				Y		
7NC-G-98			Y												Y						
7NC-G-99				Y																	

Subareas 1 and 2. Both of these subareas included no-till corn and soybeans, commercial and residential buildings, and untestable floodplain along Dragon Run and no ground surface was visible.

Subarea 3. This subarea included the Siani (western half) and Lester (eastern half) farms on the south side of Dragon Creek. Only the Siani property offered ground visibility at the time of the survey and five sites were located. All were severely eroded with 10%-50% visibility. Most were located on headlands and knoll tops about 60 to 300 meters from the Dragon Creek floodplain. The largest was 7NC-G-97, on the east side of Rt. 13, which contained 35 chert flakes and 1 chert cobble core. Sites 7NC-G-93 through 96 were small scatters of flakes and/or flake tools. No diagnostic artifacts were recovered from any of these sites and their erosion problems likely preclude the possibility of intact subsurface cultural remains.

Subarea 4. Subarea 11-4 included the land south of Dragon Creek and northeast of Birds Corner and contains previously recorded site 7NC-G-20, which produced a large cache of rhyolite and jasper blades, found several years ago by Mrs. Gladys Lester. The ten rhyolite bifaces averaged about 12 to 15 centimeters in length and had width/thickness ratios in the 10:1 and 12:1 range. The jasper bifaces were approximately the same length but had width/thickness ratios of about 5:1. Interestingly, the jasper bifaces exhibited edge crushing characteristic of use, while the rhyolite items did not. The G-20 site was examined during our survey and one rhyolite contracting stem biface (probably early WoodlandI, see Plate 1) and 10 flakes were recovered. Much of the site is heavily eroded due to agricultural activities.

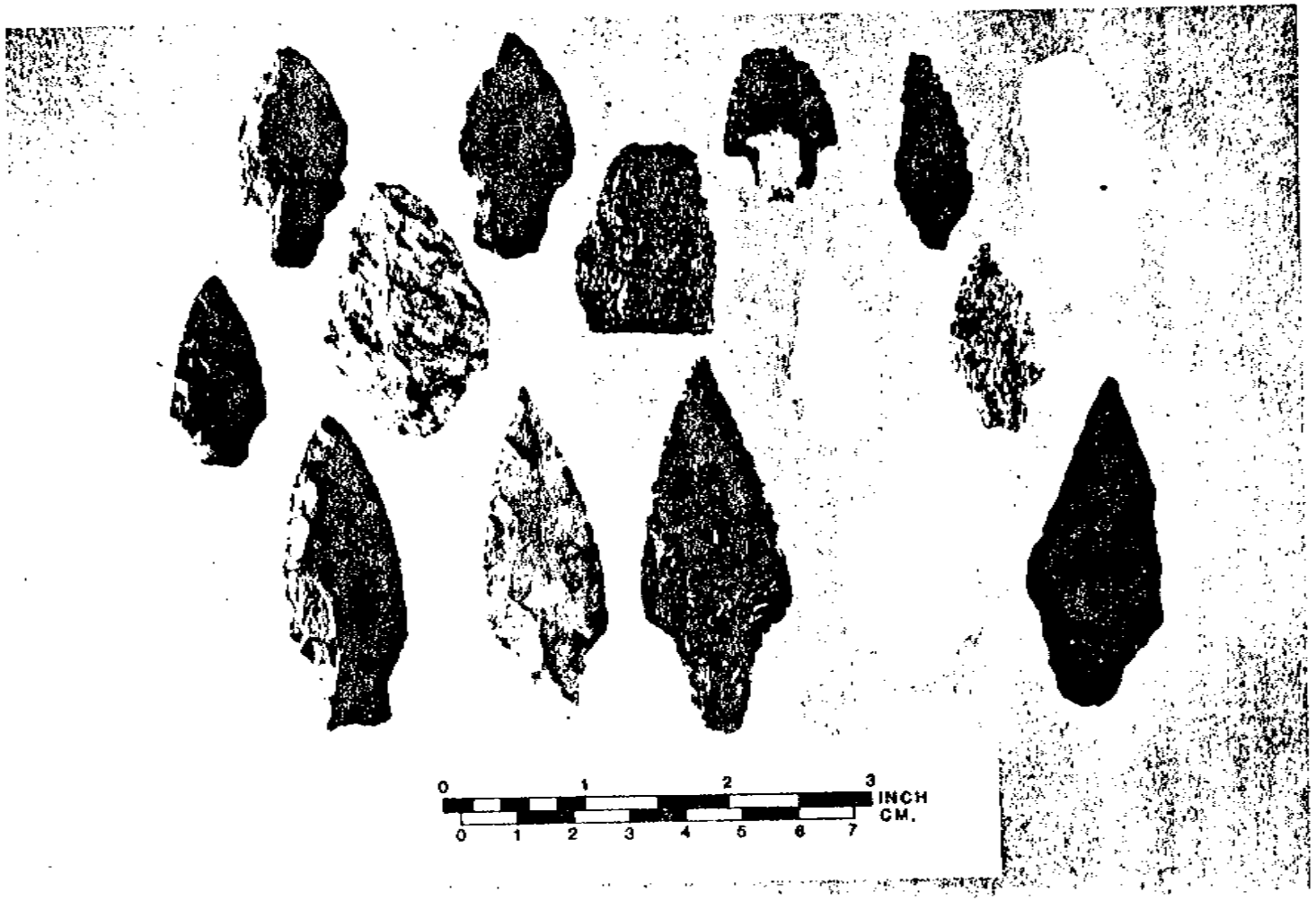
Two other sites were located along the north side of Cox Neck Lane, around the 15 meter contour which forms the divide between Dragon Creek and the former drainage through which was cut the Chesapeake and Delaware Canal. Site G-98 is a small scatter which contained 1 jasper stemmed point and 3 flakes, while G-99 contained a single small quartz triangular point (see Plate 2).

Mrs. Lester, whose family owns all of this subarea, allowed us to view her collection of artifacts from the subarea. These finds included various stemmed, notched, and triangular points of the Woodland I and II periods, but exact provenience of these artifacts was not available. However, she did indicate that most were found in the vicinity of the G-98 and G-99 sites.

After the conclusion of the pedestrian survey, Delaware Division of Highways planners sharply altered the Area 11 survey boundary. Eliminated were subareas 2, 3 (east half), and 4. A section was added on the west side of Rt. 13 from Wrangle Hill to the C & D Canal, which unfortunately could not be surveyed due to excessive crop growth.

PLATE 1

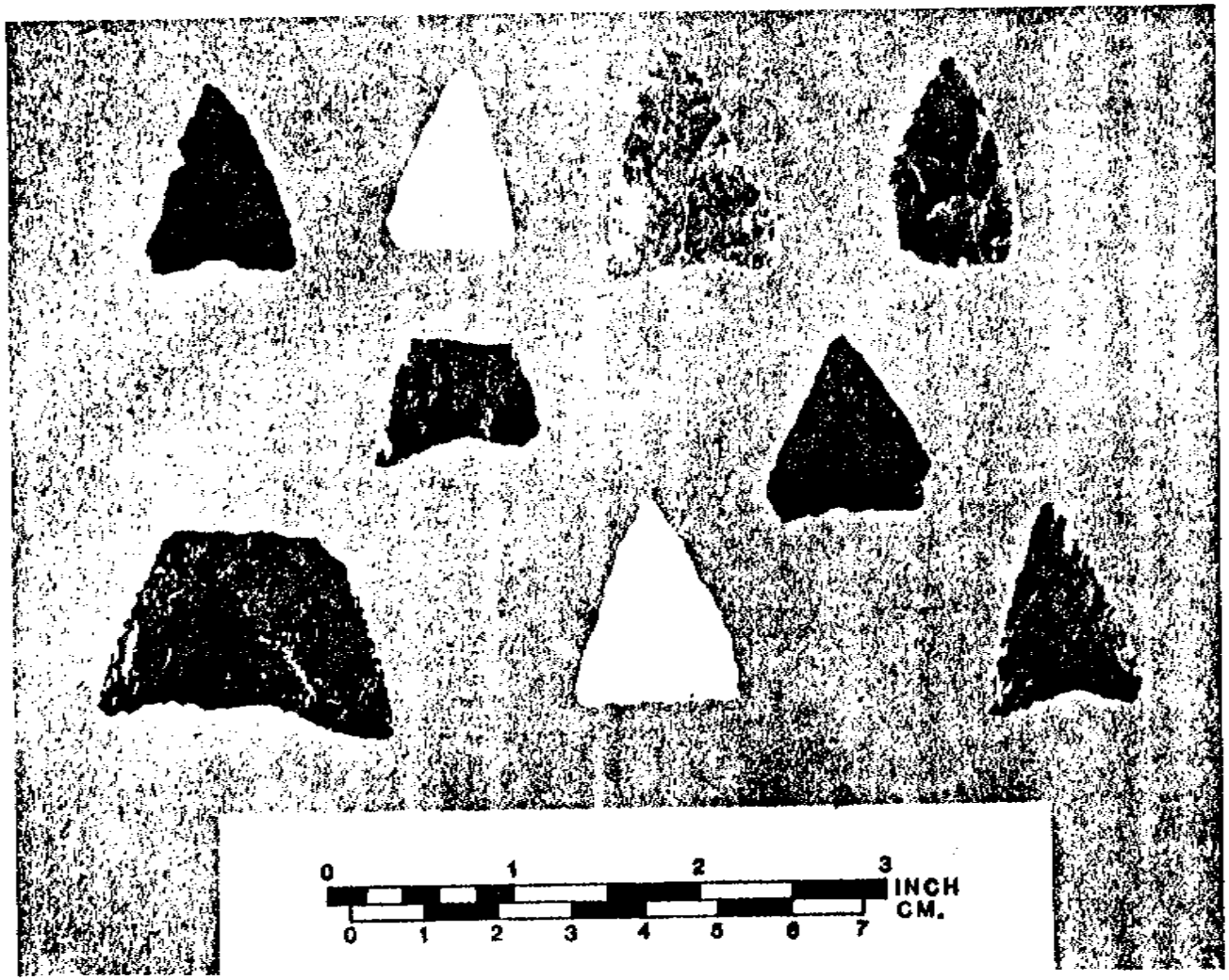
Selected Stemmed Points from Sites in the Route 13 North Survey



TOP ROW, LEFT TO RIGHT: 7NC-F-60, 7NC-J-110, 7NC-H-78, 7NC-J-105,7NC-H-51; MIDDLE ROW, LEFT TO RIGHT: 7NC-J-107, 7NC-G-20, 7NC-G-73, 7NC-G-15, 7NC-J-54; BOTTOM ROW, LEFT TO RIGHT: 7NC-H-18, 7NC-H-14, 7NC-J-90, 7NC-H-64, 7NC-J-107.

PLATE 2

Selected Triangles from Sites in the Route 13 North Survey



TOP ROW, LEFT TO RIGHT: 7NC-G-79, 7NC-G-99, 7NC-J-32, 7NC-J-47; MIDDLE ROW, LEFT TO RIGHT: 7NC-G-82, 7NC-G-81; BOTTOM ROW, LEFT TO RIGHT: 7NC-J-71, 7NC-J-54, 7NC-J-69.

Appoquinimink Area - Surface Survey. Figure 14 shows the subareas noted and the sites recorded in the Appoquinimink study area. Table 4 shows the site locational data and Table 5 shows the cultural-historical data for the these sites. This area included land on both sides of Appoquinimink and Drawyer's Creeks, which join just east of Odessa, Del. Nineteen subareas were defined and all but two (12 and 13) were examined. These were intensively surveyed by Thunderbird Research Corporation for the Middletown-Odessa-Townsend sewer project (Gardner and Stewart 1978) and that survey was considered adequate for this project.

Seventy-seven loci were noted during the pedestrian survey, conducted during March, April, and May of 1984. Seven of these were previously recorded sites that were re-examined to further define their limits. Another 8 of the 77 were determined to be unworthy of "site" designation due to a low artifact count (1 flake) or heavily eroded context. Sixty-two new sites from the pedestrian survey were recorded with the BAHP.

Subarea 1. Site 7NC-F-3, a previously recorded site was re-examined to clarify its limits and expand the range of cultural components present at the site. However, only 1 flake tool and 1 other flake were recovered. Sites 7NC-F-44 through 47 were small flake scatters distributed on the high ground along the north side of Shallcross Lake, an artificial lake created by the damming of Drawyer's Creek. No diagnostic tools were collected from these sites. Auger testing in this area revealed that considerable slopewash had occurred, as 0.50 meter deep organic zones were present in the fields in some places. Buried cultural contexts may be present in this subarea.

Subarea 2. This subarea was found to consist wholly of fallow fields, single family dwellings with associated lawns, and untestable wooded slopes and no surface examination was possible.

Subarea 3. Sites 7NC-G-39 through 45, 48, and 74 were recorded. Most were located on the west side of a small tributary to Drawyer's Creek and each consisted of a broken or discarded tool and a few flakes. They were situated on a series of headlands along the west side of the unnamed tributary and probably represent a series of small procurement sites. No diagnostic tools were recovered from any of these sites.

An historic brick scatter (7NC-G-74) was noted on the west side of the subarea on a slope leading down to another unnamed tributary to Drawyer's Creek. This scatter measured about 9 x 12 meters and contained no other artifacts.

Subarea 4. Three sites were found on the south side of Shallcross Lake Dam in an area of extremely low visibility (7NC-F-49 through 51). Site F-50 contained 1 contracting stem biface, one biface distal end, and five flakes with surface visibility less than 5%. The other two sites were small flake scatters with no diagnostics present. Because the low artifact counts are probably the result of the low visibility, all three sites may

FIGURE 14

Sites and Subareas – Appoquinimink Study Area

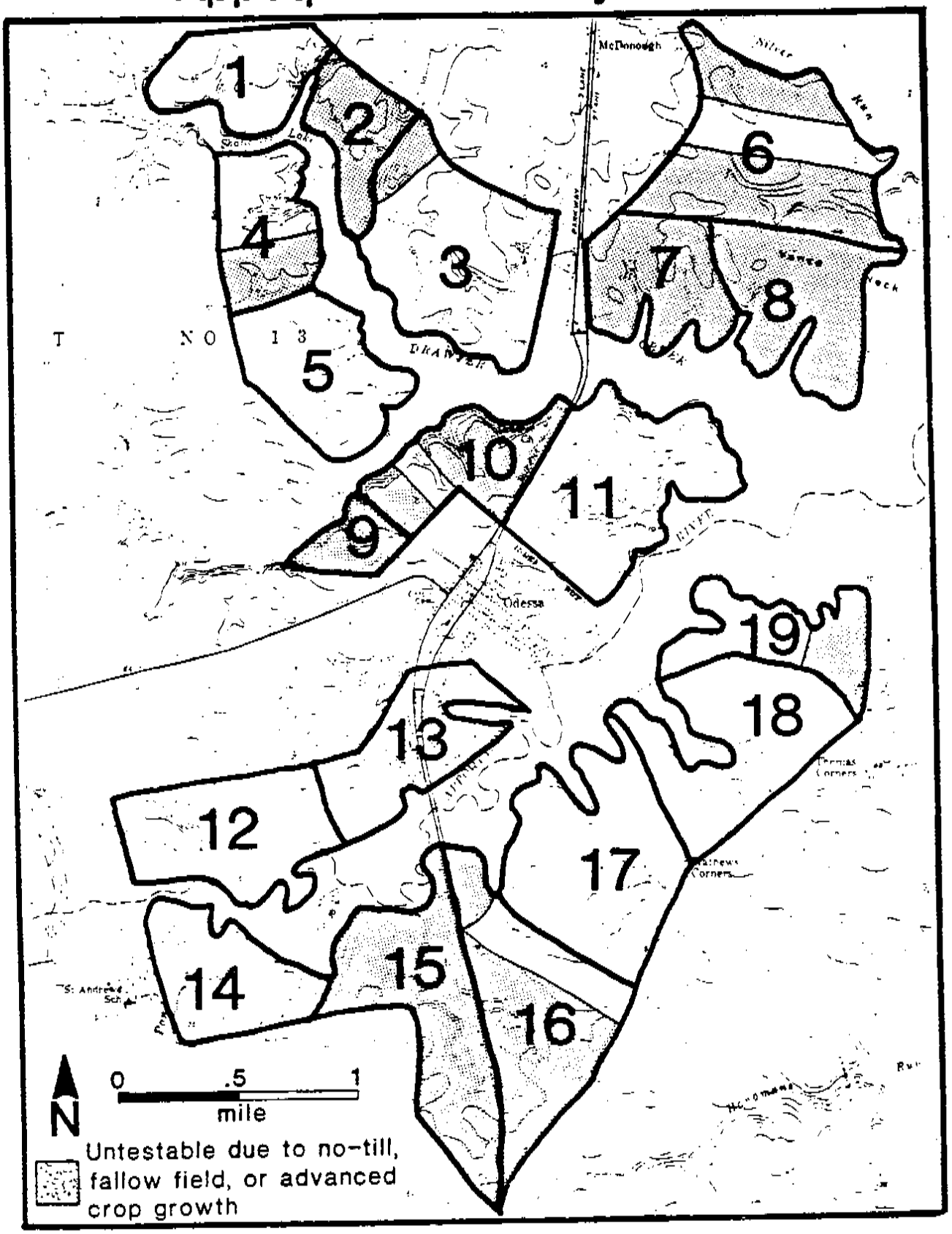


TABLE 4: LOCATIONAL DATA - APPOQUINIMINK AREA

SITE NUMBER	CRS NUMBER	USGS QUAD NAME	UTM NORTH	UTM EAST	GEOMORPHOLOGICAL SETTING	PRIMARY SOIL SERIES	SECONDARY SOIL SERIES	DRAINAGE	SURFACE WATER SETTING	CONF.	WATER DISTANCE (METERS)	SLOPE	ASPECT	ELEVATION
7NC-F-3	N3809	MIDDLETOWN	4370700	441700	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	244	2	SE	12
7NC-F-44	N9599	MIDDLETOWN	4370240	441960	HEADLAND	MeC2		DRAWYER CREEK	STREAM	N	61	5	S	13
7NC-F-45	N9600	MIDDLETOWN	4370960	441480	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	244	2	S	12
7NC-F-46	N9601	MIDDLETOWN	4370910	441410	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	244	2	S	12
7NC-F-47	N9602	MIDDLETOWN	4370880	441140	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	122	2	S	9
7NC-G-39	N9616	MIDDLETOWN	4370070	443710	HEADLAND	MeC2		DRAWYER CREEK	STREAM	N	91	5	SE	12
7NC-G-40	N9617	MIDDLETOWN	4369990	443640	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	213	2	S	15
7NC-G-41	N9618	MIDDLETOWN	4369080	443600	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	91	2	S	12
7NC-G-42	N9619	MIDDLETOWN	4369200	443550	HEADLAND	MlB2		DRAWYER CREEK	STREAM	N	198	2	SE	12
7NC-G-43	N9620	MIDDLETOWN	4369690	443470	HEADLAND	MlB2		DRAWYER CREEK	STREAM	N	244	2	SE	15
7NC-G-44	N9621	MIDDLETOWN	4369600	443420	HEADLAND	MlB2		DRAWYER CREEK	STREAM	Y	244	2	SE	15
7NC-G-45	N9622	MIDDLETOWN	4369500	443290	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	244	2	SE	15
7NC-F-48	N9603	MIDDLETOWN	4369960	442660	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	122	2	SW	9
7NC-G-34	N9651	MIDDLETOWN	4372150	442970	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	305	2	W	15
7NC-F-49	N9604	MIDDLETOWN	4370450	442060	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	183	2	E	14
7NC-F-50	N9605	MIDDLETOWN	4370100	441940	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	244	2	SE	15
7NC-F-51	N9606	MIDDLETOWN	4370010	442150	HEADLAND	MeC2		DRAWYER CREEK	STREAM	N	76	2	NE	15
7NC-F-52	N9607	MIDDLETOWN	4369900	441620	HEADLAND	MeC2		DRAWYER CREEK	STREAM	N	91	5	N	15
7NC-F-53	N9608	MIDDLETOWN	4369590	442600	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	91	2	SE	9
7NC-F-21	N3808	MIDDLETOWN	4368520	442420	HEADLAND	SaC2		DRAWYER CREEK	STREAM	N	30	5	SE	12
7NC-F-54	N9609	MIDDLETOWN	4368600	442220	HEADLAND	MeC2		DRAWYER CREEK	STREAM	N	244	5	S	15
7NC-F-55	N9610	MIDDLETOWN	4369410	442260	HEADLAND	MeB2		DRAWYER CREEK	STREAM	Y	30	2	NE	11
7NC-F-56	N9611	MIDDLETOWN	4369330	441900	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	76	2	N	15
7NC-G-46	N9623	MIDDLETOWN	4370910	441410	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	244	2	S	12
7NC-G-47	N9624	MIDDLETOWN	4368290	442880	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	91	2	N	17
7NC-G-48	N9625	MIDDLETOWN	4368160	442990	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	0	10	N	17
7NC-G-13	N3810	MIDDLETOWN	4368570	445780	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	23	2	NE	9
7NC-G-49	N9626	MIDDLETOWN	4366650	444300	HEADLAND	MeC2		DRAWYER CREEK	STREAM	N	91	5	N	15
7NC-G-50	N9627	MIDDLETOWN	4365570	444390	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	61	2	N	14
7NC-G-15	N3011	MIDDLETOWN	4368560	444600	HEADLAND	MeB2		DRAWYER CREEK	STREAM	Y	15	2	N	14
7NC-G-51	N9628	MIDDLETOWN	4368170	444250	HEADLAND	MeC2		APPOQUINIMINK	STREAM	N	91	5	SE	12
7NC-G-52	N9629	MIDDLETOWN	4368250	444510	HEADLAND	MeB2		APPOQUINIMINK	STREAM	N	152	2	SE	11
7NC-G-53	N9630	MIDDLETOWN	4368100	444420	HEADLAND	MeB2	MeC2	APPOQUINIMINK	STREAM	N	152	2	SE	12
7NC-G-54	N9631	MIDDLETOWN	4369040	444250	HEADLAND	MeB2	MeC2	APPOQUINIMINK	STREAM	N	183	2	E	12
7NC-G-55	N9632	MIDDLETOWN	4367050	444200	HEADLAND	MeB2	MeC3	APPOQUINIMINK	STREAM	N	152	2	E	12
7NC-G-56	N9633	MIDDLETOWN	4367600	444190	HEADLAND	SaB2		APPOQUINIMINK	STREAM	N	30	2	SE	12
7NC-G-57	N9634	MIDDLETOWN	4367610	443690	HEADLAND	SaB2	SaC2	APPOQUINIMINK	STREAM	N	61	2	SW	12
7NC-G-58	N9635	MIDDLETOWN	4367200	443650	HEADLAND	SaB2		APPOQUINIMINK	STREAM	N	46	2	SE	12
7NC-G-59	N9636	MIDDLETOWN	4368760	444140	HEADLAND	SaC2		DRAWYER CREEK	STREAM	N	91	5	N	12
7NC-G-60	N9637	MIDDLETOWN	4368200	444320	HEADLAND	SaC2		DRAWYER CREEK	STREAM	N	30	5	N	9
7NC-G-61	N9638	MIDDLETOWN	4368090	444160	HEADLAND	SaC2		DRAWYER CREEK	STREAM	N	23	5	N	9
7NC-G-62	N9639	MIDDLETOWN	4368670	444430	HEADLAND	SaC2		DRAWYER CREEK	STREAM	N	6	5	N	9
7NC-G-64	N9641	MIDDLETOWN	4368650	444640	HEADLAND	MeB2		DRAWYER CREEK	STREAM	N	30	2	N	9
7NC-G-65	N9642	MIDDLETOWN	4368730	444750	HEADLAND	MeB2		DRAWYER CREEK	STREAM	Y	3	2	N	5
7NC-G-66	N9643	MIDDLETOWN	4368680	444040	HEADLAND	MeB2		DRAWYER CREEK	STREAM	Y	6	2	NE	8
7NC-G-67	N9644	MIDDLETOWN	4368390	445000	HEADLAND	MeB2		APPOQUINIMINK	STREAM	Y	152	2	E	6
7NC-F-57	N9612	MIDDLETOWN	4364740	441660	HEADLAND	MeB2		APPOQUINIMINK	STREAM	N	122	2	W	12
7NC-F-58	N9613	MIDDLETOWN	4363430	441600	HEADLAND	MeB2		APPOQUINIMINK	STREAM	N	152	2	W	12
7NC-F-59	N9614	MIDDLETOWN	4364900	442060	HEADLAND	SaB2		APPOQUINIMINK	STREAM	N	366	2	N	12
7NC-F-28	N3022	MIDDLETOWN	4365020	441600	HEADLAND	MeB2		APPOQUINIMINK	STREAM	N	305	2	N	12

TABLE 4 (cont.)

SITE NUMBER	CRS NUMBER	USGS QUAD NAME	UTM NORTH	UTM EAST	GEOMORPHOLOGICAL SETTING	PRIMARY SOIL SERIES	SECONDARY SOIL SERIES	DRAINAGE	SURFACE WATER SETTING	CONF.	WATER DISTANCE (METERS)	SLOPE	ASPECT	ELEVATION
7NC-E-60	N9615	MIDDLETOWN	4363060	441480	HEADLAND	MaB2		APPOQUINIMINK	STREAM	N	6	2	W	9
7NC-G-68	N9645	MIDDLETOWN	4364910	441200	BAY/BASIN	SaB2	KeA	APPOQUINIMINK	BAY/BASIN	N	61	2	SE	15
7NC-G-69	N9646	MIDDLETOWN	4363870	441310	BAY/BASIN	SaB2	EmA	APPOQUINIMINK	BAY/BASIN	N	23	2	SE	15
7NC-G-70	N9647	MIDDLETOWN	4364950	444050	HEADLAND	SaB2	EmA	APPOQUINIMINK	STREAM	N	61	2	NW	17
7NC-G-71	N9648	MIDDLETOWN	4363940	443640	INTERIOR FLAT	SaC2	SaC2	APPOQUINIMINK	STREAM	N	76	2	SW	15
7NC-G-72	N9649	MIDDLETOWN	4365040	443700	HEADLAND	SaA	SaB2	APPOQUINIMINK	STREAM	N	610	0	N	14
7NC-G-73	N9650	MIDDLETOWN	4365190	443440	HEADLAND	KeB2	KpC3	APPOQUINIMINK	STREAM	N	0	2	E	12
7NC-G-26	N3874	MIDDLETOWN	4365700	443540	HEADLAND	MaC2	MaC3	APPOQUINIMINK	STREAM	N	229	2	W	6
7NC-G-28	N3899	MIDDLETOWN	4366080	443700	FLOODPLAIN	SaB2	MaC3	APPOQUINIMINK	STREAM	Y	30	2	S	3
7NC-G-11	N3831	MIDDLETOWN	4366250	444140	FLOODPLAIN	MaB2	MaC2	APPOQUINIMINK	STREAM	N	152	2	SW	5
7NC-G-75	N9652	MIDDLETOWN	4365860	444320	HEADLANDIN	MaB2	MaC2	APPOQUINIMINK	STREAM	N	152	2	W	5
7NC-G-76	N9653	MIDDLETOWN	4365720	444420	HEADLAND	MaB2	MaC2	APPOQUINIMINK	STREAM	N	152	2	W	8
7NC-G-77	N9654	MIDDLETOWN	4366790	444300	HEADLAND	MaC2		APPOQUINIMINK	STREAM	N	244	5	SW	9
7NC-G-78	N9655	MIDDLETOWN	4366640	445220	HEADLAND	SaB2		APPOQUINIMINK	STREAM	N	122	2	SW	12
7NC-G-79	N9656	MIDDLETOWN	4366660	445480	HEADLAND	SaB2		APPOQUINIMINK	STREAM	N	0	2	SW	12
7NC-G-80	N9657	MIDDLETOWN	4366530	445600	HEADLAND	SaB2		APPOQUINIMINK	STREAM	N	0	2	W	9
7NC-G-81	N9658	MIDDLETOWN	4366040	445530	HEADLAND	SaB2		APPOQUINIMINK	STREAM	N	0	2	NW	12
7NC-G-82	N9659	MIDDLETOWN	4366180	444910	HEADLAND	SaB2		APPOQUINIMINK	STREAM	N	152	2	N	14
7NC-G-83	N9660	MIDDLETOWN	4366100	444930	HEADLAND	SaB2		APPOQUINIMINK	STREAM	N	305	2	W	12
7NC-G-84	N9661	MIDDLETOWN	4365910	444790	HEADLAND	SaC2		APPOQUINIMINK	STREAM	N	152	5	NW	12
7NC-G-85	N9662	MIDDLETOWN	4366510	444520	HEADLAND	MaB2		APPOQUINIMINK	STREAM	N	46	2	SW	9
7NC-G-86	N9663	MIDDLETOWN	4366300	444600	HEADLAND	MaB2		APPOQUINIMINK	STREAM	N	30	2	SW	9
7NC-G-87	N9664	MIDDLETOWN	4366000	444640	HEADLAND	MaB2		APPOQUINIMINK	STREAM	N	122	2	SW	11
7NC-G-88	N9665	MIDDLETOWN	4367360	445390	HEADLAND	SaB2		APPOQUINIMINK	STREAM	Y	0	2	S	9
7NC-G-89	N9666	MIDDLETOWN	4367100	445300	HEADLAND	SaB2		APPOQUINIMINK	STREAM	N	152	2	N	12
7NC-G-90	N9667	MIDDLETOWN	4367080	444590	HEADLAND	SaC		APPOQUINIMINK	STREAM	N	91	15	W	6
7NC-G-91	N9668	MIDDLETOWN	4367110	444880	HEADLAND	SaB2		APPOQUINIMINK	STREAM	N	305	2	NW	9
7NC-G-92	N9669	MIDDLETOWN	4367050	445490	HEADLAND	SaB2		APPOQUINIMINK	STREAM	N	0	2	N	9

TABLE 5: CULTURAL-HISTORICAL DATA - APPOQUINIMINK AREA

SITE NUMBER	PALEO ARCHAIC	WOODLAND I	WOODLAND II	HISTORIC	BIFACE	SCRAPER	FLAKE TOOL	CORE	FLAKES	GROUND STONE TOOL	FCR	CERAMICS
CNE-E-3							Y		Y			
CNE-E-43									Y			
CNE-E-45									Y			
CNE-E-46									Y			
CNE-E-47									Y			
CNE-G-39					Y				Y			
CNE-G-40									Y			
CNE-G-41								Y	Y			
CNE-G-42					Y				Y			
CNE-G-43							Y		Y			
CNE-G-44									Y			
CNE-G-45									Y			
CNE-G-48				Y								
CNE-G-49					Y				Y			
CNE-E-50		Y							Y			
CNE-E-51					Y	Y			Y		Y	
CNE-E-52		Y		Y					Y			
CNE-E-53									Y			
CNE-E-21									Y			
CNE-E-54									Y			
CNE-E-55									Y			
CNE-E-56					Y							
CNE-G-46									Y			
CNE-G-47									Y			
CNE-G-48					Y				Y		Y	
CNE-G-15									Y			
CNE-G-49					Y				Y		Y	
CNE-G-50					Y							
CNE-G-17		Y		Y	Y				Y			
CNE-G-51		Y							Y			
CNE-G-52					Y				Y			
CNE-G-53									Y			
CNE-G-54							Y					
CNE-G-55					Y					Y		
CNE-G-56	Y							Y	Y			
CNE-G-57									Y			
CNE-G-58				Y					Y		Y	Y
CNE-G-59			Y	Y					Y		Y	Y
CNE-G-60			Y						Y			
CNE-G-61				Y					Y		Y	Y
CNE-G-62			Y	Y					Y		Y	Y
CNE-G-64			Y						Y			
CNE-G-65									Y			
CNE-G-66									Y		Y	
CNE-G-67					Y				Y			
CNE-E-57									Y		Y	
CNE-E-58									Y			
CNE-E-59									Y			
CNE-E-20												

TABLE 5 (CONT)

SITE NUMBER	PALEO	ARCHAIC	WOODLAND I	WOODLAND II	CF	BL	WN	CA	WB	DA	DF	SC	MG	HISTORIC	BIFACE	SCRAPER	FLAKE TOOL	CORE	FLAKES	GROUND STONE TOOL	FCR	CERAMICS
2NC-G-60			Y		Y										Y		Y		Y			
2NC-G-68																	Y		Y			
2NC-G-69																	Y		Y			
2NC-G-70																			Y			
2NC-G-71																	Y					
2NC-G-72															Y				Y			
2NC-G-73			Y		Y										Y		Y		Y		Y	
2NC-G-26			Y					Y							Y							
2NC-G-28																			Y			
2NC-G-11			Y		Y			Y			Y				Y		Y		Y		Y	
2NC-G-75			Y					Y							Y				Y			
2NC-G-76			Y												Y				Y			
2NC-G-77																			Y			
2NC-G-78																			Y			
2NC-G-79				Y									Y		Y				Y			
2NC-G-80																		Y				
2NC-G-81				Y									Y		Y							
2NC-G-82				Y									Y		Y			Y	Y		Y	
2NC-G-83																	Y		Y			
2NC-G-84																			Y			
2NC-G-85																	Y		Y			
2NC-G-86																			Y			
2NC-G-87																			Y			
2NC-G-88															Y				Y		Y	
2NC-G-89																Y			Y			
2NC-G-90			Y												Y							
2NC-G-91																			Y			
2NC-G-92																			Y			

have been intensively occupied.

Subarea 5. Located at the confluence of Drawyer's Creek and an unnamed tributary, this area is almost entirely on the Raymond Burris farm. Sites 7NC-F-52 through 56 and previously recorded site F-21 were found in this subarea. Site F-52 is located on the south side of Drawyer's Creek and contained one Fox Creek-like point, one broken undiagnostic biface, one scraper reworked from a point, 60 flakes, and fire-cracked rock. A few flakes were found around the edge of F-21, which appears to be almost completely destroyed by borrow operations. The remaining sites were flake scatters in fields on the headlands along the creeks.

Subarea 6. Most of this subarea was woodlot, pasture, or subdivision. A large cornfield on the David Reed farm was walked with no finds. The only artifact found in the subarea was a large early stage quartzite biface found on a wooded slope on the south side of Silver Run (7NC-G-46).

Subarea 7. This subarea was comprised entirely of no-till fields and survey could not be conducted.

Subarea 8. This subarea was all no-till cornfield and dairy pasture and offered no surveyable ground.

Subarea 9. Comprised entirely of no-till soybeans and pasture, this subarea also provided no visible ground surface.

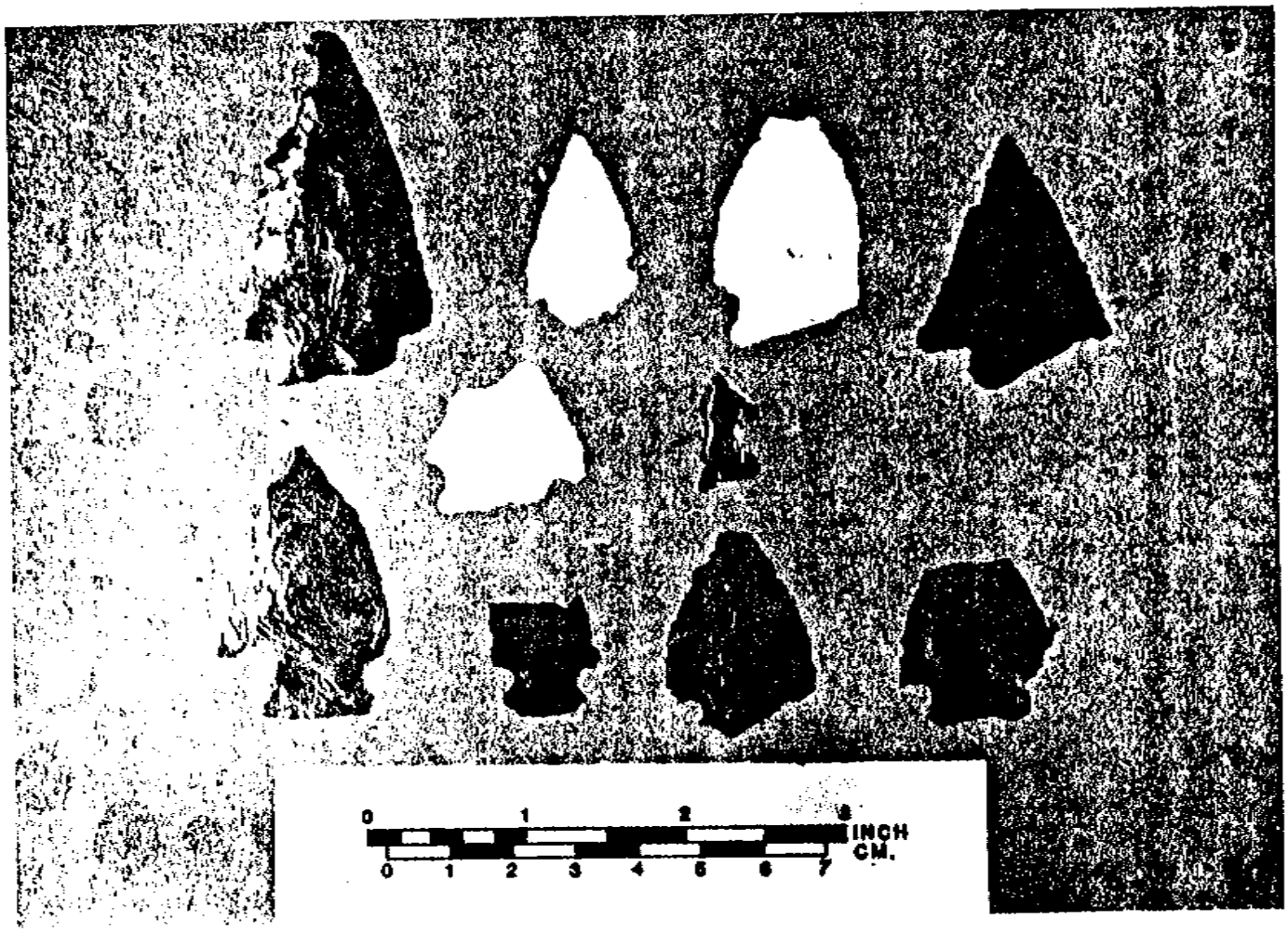
Subarea 10. Site 7NC-G-13, on the grounds of Old Drawyer's Church, offered patchy visibility. Nevertheless, one notched biface fragment, (see Plate 3) 8 flakes, and several pieces of fire-cracked rock were found. The finds were made on the headland on the southeast side of Drawyer's Creek, about 60 meters southwest of the church building. Two other small flake scatters were found in the grain fields northwest of Odessa (7NC-G-47 and 48).

Subarea 11. This subarea yielded 10 new sites (7NC-G-49 through 58) and one previously recorded site was also surveyed (7NC-G-15). A single artifact, a quartz stemmed point, was recovered from G-15 (see Plate 1).

The most notable site within the subarea is 7NC-G-56, which produced one double full-grooved axe (Plate 4), one bifurcated-base point (Plate 5), one quartz early stage biface reject, and 22 flakes. It is located on a rise about 150 meters northwest of Appoquinimink Creek. The bifurcate and the axe were found about 15 meters apart and the latter appeared to be unfinished. However, the crest of the rise, where most of the artifacts were found, was severely eroded and the site is probably no longer intact. The terrace below and southeast of the site was augered and 40 to 55 centimeter deep upper organic zones were encountered. Being too deep for modern plow zones, these figures suggest the presence of old landscapes buried by recent slopewash.

PLATE 3

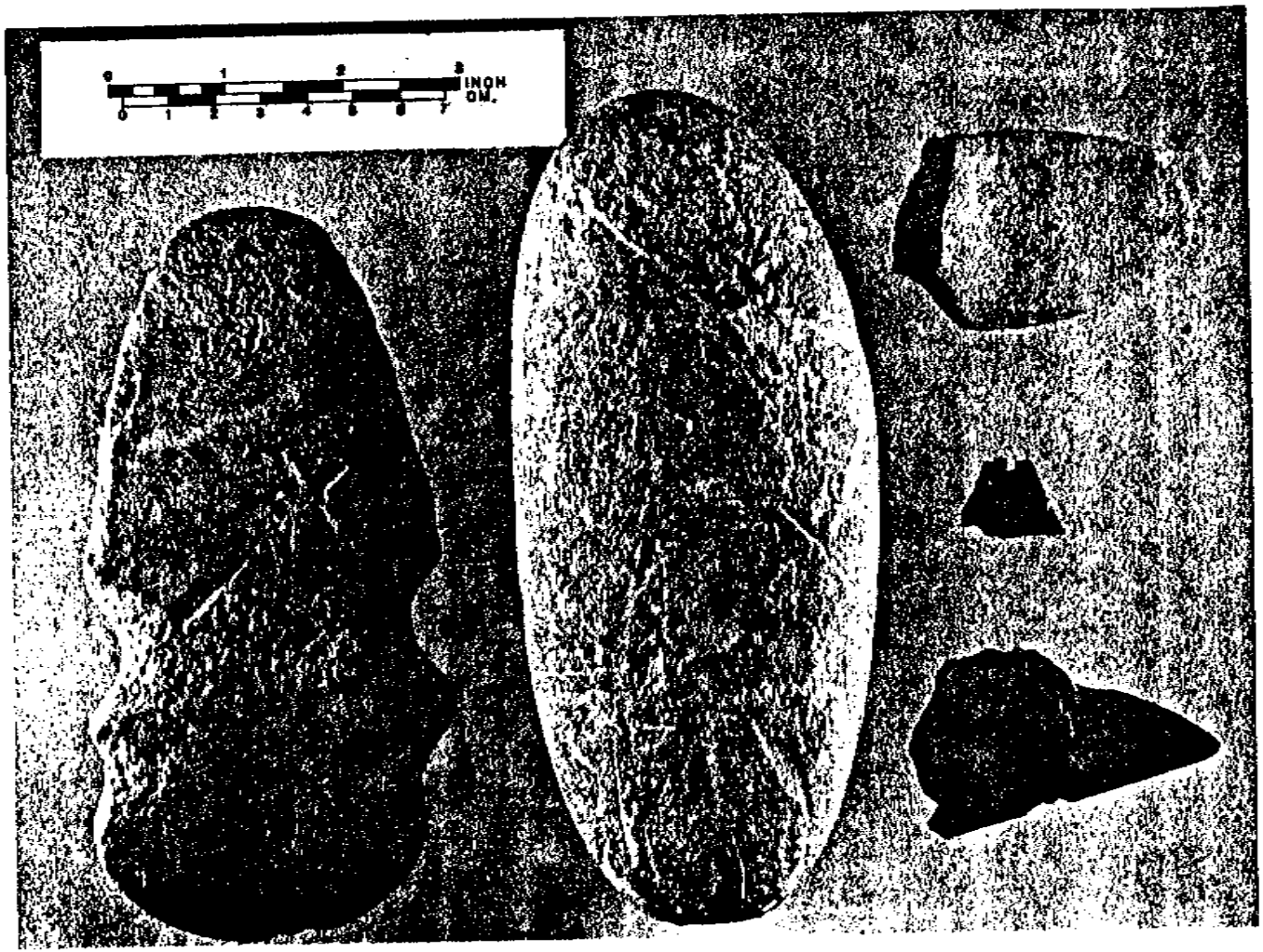
Selected Notched Points from Sites in the Route 13 North Survey



TOP ROW, LEFT TO RIGHT: 7NC-J-91, 7NC-J-61, 7NC-H-32, 7NC-J-81; MIDDLE ROW, LEFT TO RIGHT: 7NC-F-57, 7NC-G-13; BOTTOM ROW, LEFT TO RIGHT: 7NC-H-14, 7NC-J-54, 7NC-J-103, 7NC-J-68.

PLATE 4

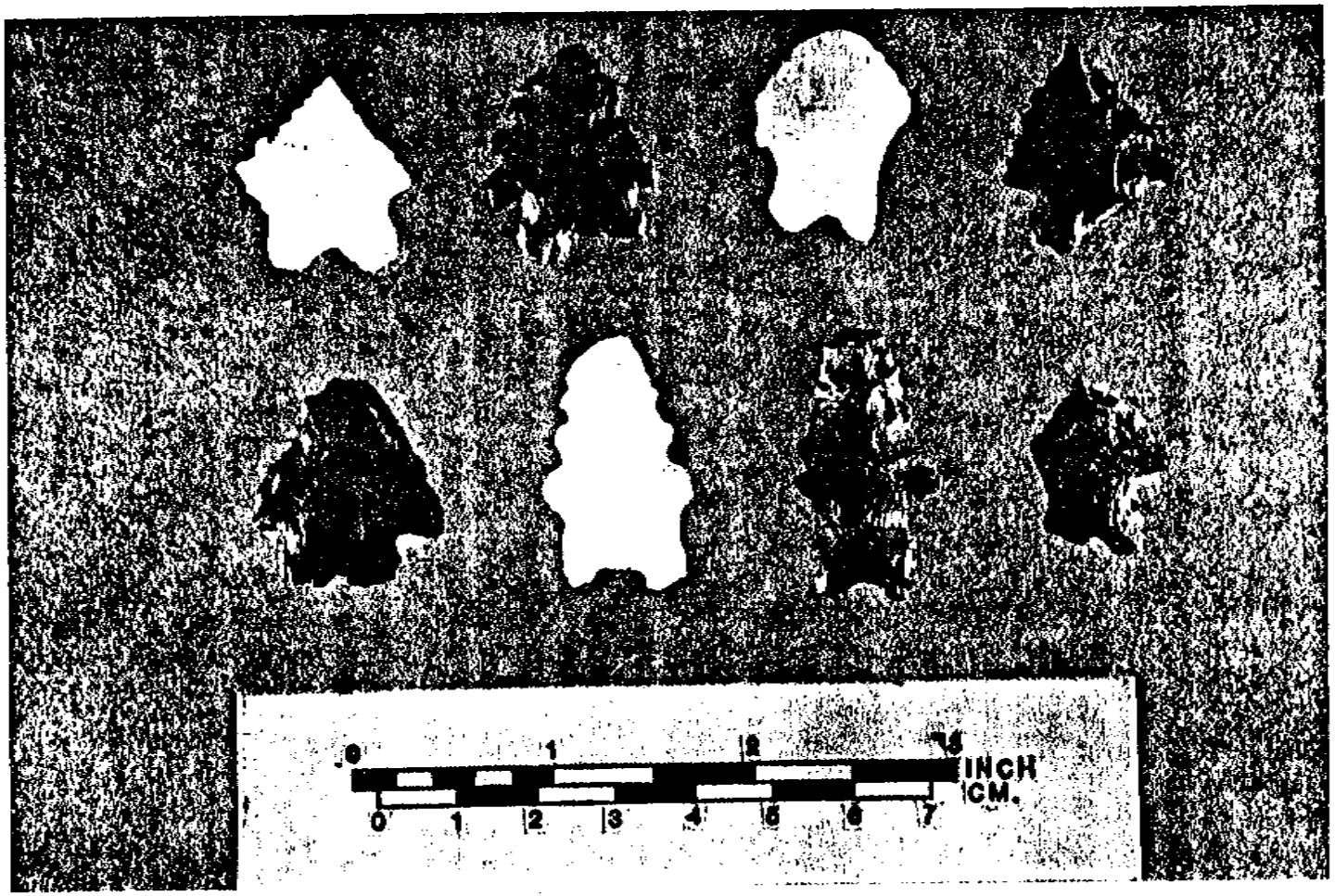
Selected Ground Stone Tools from Sites in the Route 13 North Survey



LEFT: double full-grooved ax from 7NC-G-56; CENTER: hammerstone from 7NC-H-67; RIGHT, TOP TO BOTTOM: atlatl weight fragment from 7NC-J-117, gorget fragment from 7NC-G-73, "boatstone" fragment from 7NC-J-110.

PLATE 5

Selected Bifurcated Base Points from Sites in the Route 13 North Survey



TOP ROW, LEFT TO RIGHT: 7NC-J-105, 7NC-J-105, 7NC-H-60, 7NC-J-99; BOTTOM ROW, LEFT TO RIGHT: 7NC-J-86, 7NC-G-56, 7NC-J-117, 7NC-H-39.

Site 7NC-G-50 arcs around the head of an ephemeral stream to Drawyer's Creek and yielded one non-diagnostic quartz biface distal end, 36 flakes, and several dozen pieces of fire-cracked rock. Given the low average visibility of 5% at this site, the possibility exists that a large site is located here.

Most of the remaining sites were small flake scatters or combinations of broken tools, flakes, and fire-cracked rock in small amounts. These were located in various places throughout the subarea: on headlands overlooking the major streams, along the lengths of ephemeral streams draining to the major streams, and around the springheads. Included are sites 7NC-G-49, 51-55, 57, and 58. All diagnostic artifacts recovered from this subarea during the pedestrian survey indicated Archaic and early Woodland I occupation.

Subarea 12. Gardner and Stewart's report (1978) lists one known site from this subarea, 7NC-F-10, which produced over 500 artifacts. Included are projectile points, scrapers, choppers, and flakes, but temporal data is lacking. It most likely functioned as some sort of base camp.

North and northeast of the F-10 site, Gardner and Stewart reported finds from surface and subsurface testing. This material, found along the 6 meter contour line, included contracting stem bifaces, a Brewerton eared triangle point, a Hell Island pottery fragment, and a steatite bowl fragment. These materials indicate a Woodland I occupation. One-half mile northwest of the F-10 site, they reported finding an undiagnostic lanceolate biface, another broken biface, and numerous flakes. No temporal designation was applied to this site. No historic archaeological remains were reported from their survey.

Subarea 13. Two previously recorded sites lie within this subarea and were not resurveyed as part of this report. Gardner and Stewart (1978) acknowleged the finding of no additional archaeological remains during their survey.

Subarea 14. Four new sites were identified and a previously recorded site was re-examined. Site 7NC-F-28, already known from BAHP files, was found to be a no-till field and visibility was less than 2%. About 8-10 flakes were observed on the surface but no diagnostics were found. Site 7NC-F-60 is located on a bluff on the south side of Appoquinimink Creek and contained one argillite teardrop-shaped biface, one argillite Bare Island/Lackawaxen-like biface (see Plate 1), one chert pebble flake tool, and about 60 flakes. The artifact concentration is fairly dense and is representative of the Woodland I Period. Site 7NC-F-59, on the headland just south of Hell Island, is in a field of no-till and visibility was less than 2%. However, 20 flakes were found, possibly indicating the presence of a large site. Site 7NC-F-57, at the head of an ephemeral stream, contained one quartz corner-notched point (see Plate 3) and about 10 flakes, but has suffered from considerable erosion. Site 7NC-F-58 was a small flake scatter located along

another ephemeral stream to Appoquinimink Creek.

Subarea 15. This subarea is all no-till fields, woodlots, and dwellings and offered no surveyable land. Three previously recorded sites were noted: F-7, F-9, and G-21. The Hell Island Site (F-7) has been reported elsewhere (Wright 1962) and was not examined as part of this survey. It is currently heavily wooded. Site F-9 is in a no-till cornfield and was examined. However, visibility was nil and no artifacts were observed. Site G-21 appears to be completely destroyed by recent housing construction.

Subarea 16. Six sites were recorded from the northern half of this subarea, mostly along the unnamed stream flowing northwest to the Appoquinimink. The southern half is mostly fallow fields and housing subdivisions and no surface areas were visible. The most notable site is 7NC-G-73, a 30 meter by 430 meter continuous scatter along the south side of the above mentioned unnamed tributary. Recovered were one slate gorget fragment (Plate 4), two stemmed bifaces (see Plate 1), two undiagnostic biface distal fragments, two flake tools, over 300 flakes and numerous pieces of fire-cracked rock.

One large "spokeshave"-like jasper flake tool and a jasper chunk with a battered edge were found only three meters apart at site G-71, located on a broad flat area south of G-73. No other artifacts were found at this site. Sites G-68, 69, 70, and 72 were flake scatters located in a poorly-drained area at the head of the unnamed tributary. The largest was G-68, with about 50 flakes, one core, and one flake tool. The other three contained about 8-10 flakes, flake tools, and fire-cracked rock. The G-73 site may be interpreted as a macro-band base camp with the others representing procurement sites.

Subarea 17. The southern two-thirds of this subarea is no-till corn and offered no visibility. Previously recorded sites G-26 through 28 were noted and examined, but visibility was extremely poor. One non-diagnostic rhyolite point fragment was found within the limits of G-26 and a pair of flakes within G-28. Nothing was located at G-27 or anywhere else in that vicinity.

Known site G-11 was surveyed and its limits greatly expanded. It covers at least 10 hectares (25 acres), with the southern boundary likely constrained by agricultural activity in the form of windbreaks and low visibility plowed fields. Artifacts were found in virtually every corner of the field, which was bounded on the north, east, and west by streams. Recovered or observed were 13 stemmed points, 2 early stage biface rejects, 1 late stage biface reject, 2 biface distal end fragments, 7 flake tools, several hundred flakes, and several dozen fire-cracked rock fragments. Visibility was low - only about 20%. The site is comprised of two major geophysical settings: a low terrace on the northern side along the shore of the Appoquinimink, and a 7 meter high eroded knoll in the southeast part of the site. Artifacts were concentrated at these

two locations, although there was no segregation by artifact style or type. The low terrace probably holds greater promise for yielding intact living surfaces and features, as it probably has not been subjected to the same erosion as the knoll above it.

Sites G-75 and 76 each consisted of a broken stemmed point and flakes and were located up the small tributary that passes by the southwest side of the G-11 site. They are probably procurement sites associated with the G-11 occupants.

Subarea 18. One site was previously recorded from this subarea (G-25) and eleven new ones were located during the survey. This subarea contains little land bearing directly on Appoquinimink Creek but contains numerous tributaries, springheads, and ephemeral streams which dissect the headlands and drain to the Appoquinimink. Ten of the eleven sites consisted of a single flake, a single biface, or a few flakes and a biface and were located on small rises or at springheads up to one kilometer from the Appoquinimink. Included in this group are 7NC-G-77 through 81 (see Plate 1) and 83 through 87.

Site G-82, located on a north facing slope along a tributary to the Appoquinimink, appears to be a cobble reduction site, as the surface was littered with numerous cobble cores and debitage. The material was mostly a red and gray quartzite with large, well-cemented grains and a number of large cobbles and decortication flakes were observed.

This subarea was also notable in that three sites produced black chert triangular points, a minority type of this survey: 7NC-G-79, 81, and 82 (see Plate 2).

Subarea 19. Five sites were identified in this subarea, which contained numerous sections of headland overlooking the broad tidal floodplain at the confluence of Appoquinimink and Drawyer's Creeks. Most of the subarea is no-till and pasture and offered limited visibility. Nevertheless, some of the five sites yielded relatively high artifact counts, indicating the presence of intensely occupied sites.

One such site is 7NC-G-88, on a headland about 10 meters above the floodplain. A 4x8 meter patch of ground with 30% visibility produced 2 non-diagnostic biface distal ends, 1 biface basal fragment (either corner-notched or bifurcated base), 5 flakes, and fire-cracked rock. Visibility of the surrounding ground was less than 5% and the extent of the site could not be ascertained.

A large jasper biface was discovered on a small terrace on a slope overlooking the floodplain (7NC-G-90). It was found by kicking away a 0.10 square meter patch of leaf cover at a random spot on the terrace. Sites 7NC-G-89, 90, and 92 are flake scatters found in areas of very low visibility.

Although only 20 total artifacts were recovered from the entire subarea during the pedestrian survey, five were tools. This fact and the apparently high artifact density suggest it probably contains many large, intensely occupied sites.

In sum, the pedestrian survey of the Appoquinimink area resulted in the discovery of 62 new archaeological sites. After the conclusion of the pedestrian survey, Delaware Division of Highways planners sharply reduced the Area 1 survey boundary. Subareas eliminated from future consideration for Rt. 13 Corridor rights-of-way included: 1, 2, 3 (western half), 4, 5, 6 (most), 12, 14, 18, and 19.

Appoquinimink Area - Subsurface Testing. After DelDOT planners had removed these portions of the Appoquinimink area from consideration, subsurface testing was undertaken at many of the areas which were unavailable for surface examination (Figure 15). The results of this testing is noted below. The sites found from subsurface testing are noted on Figure 14 and their attributes are listed in Tables 4 and 5.

Two specific areas were selected for subsurface testing and both are located on the south side of Drawyer's Creek north of Odessa. One of these extended southwesterly from Old Drawyer's Church (Subarea 10) and the other extended due east of the Church on the east side of present Rt. 13 (Subarea 11). Permission could be obtained for the latter parcel only and a total of nine 1x1 meter test units were excavated within it. All test units were excavated by hand tools and all soil sifted through 1/4-inch mesh screen. Excavation was by 10 centimeter arbitrary levels within natural soil horizons and units were taken to culturally sterile soil, usually a heavily clayey silt or loam. Appendix IV provides a summary of the important soil profiles. Cultural materials were found ranging from just below the surface to from 15 to 45 centimeters below the surface.

The woodlots tested in this subarea were located on a series of 2 to 12 meter high bluffs separated by ravines along Drawyer's Creek and were characterized by climax forest growth. Many large maple, oak, and tulip trees were present and undergrowth was minimal. From bluff tops, large expanses of the broad Drawyer's Creek floodplain could be observed.

All nine of the test units contained prehistoric material and, as each was located on a separate headland projection, each was given a separate site number (7NC-G-59 through 67). All but #67 possessed stratigraphies indicating they had never been plowed. All contained lithic debitage and most contained fire-cracked rock. Sites 7NC-G-59, 60, 62, 63, and 64 contained sherds of Minguannan ceramics and 7NC-G-62 also produced a prehistoric pipestem fragment, probably from an elbow pipe (see Plate 6). Bifaces were found in G-59 (non-diagnostic chert) and G-63 (corner-notched jasper). The corner-notched biface was found in direct association with Minguannan ceramics. See Appendix IV for representative profiles and Appendix V for a

FIGURE 15

Sub-surface Test Locations - Appoquinimink Study Area

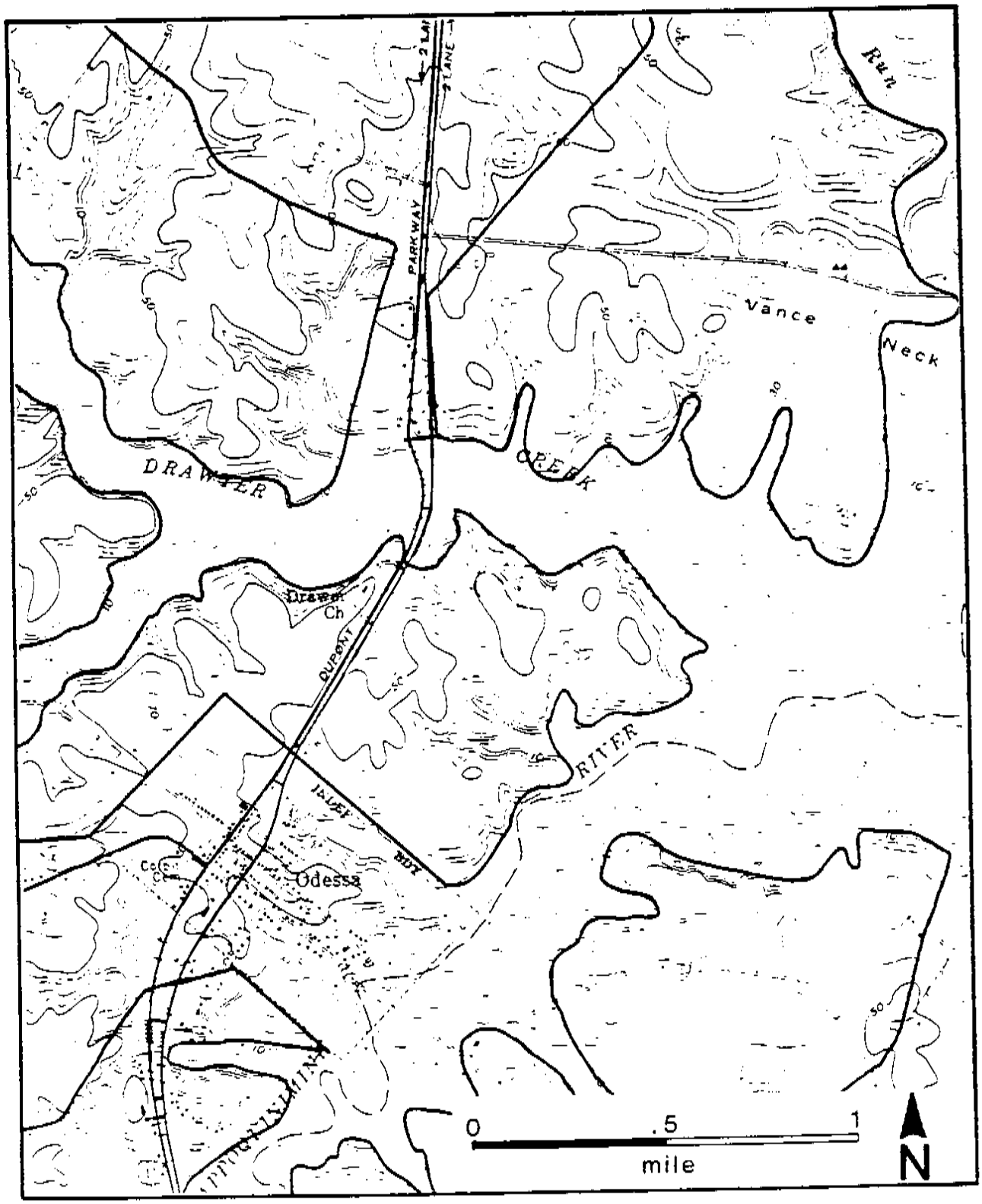
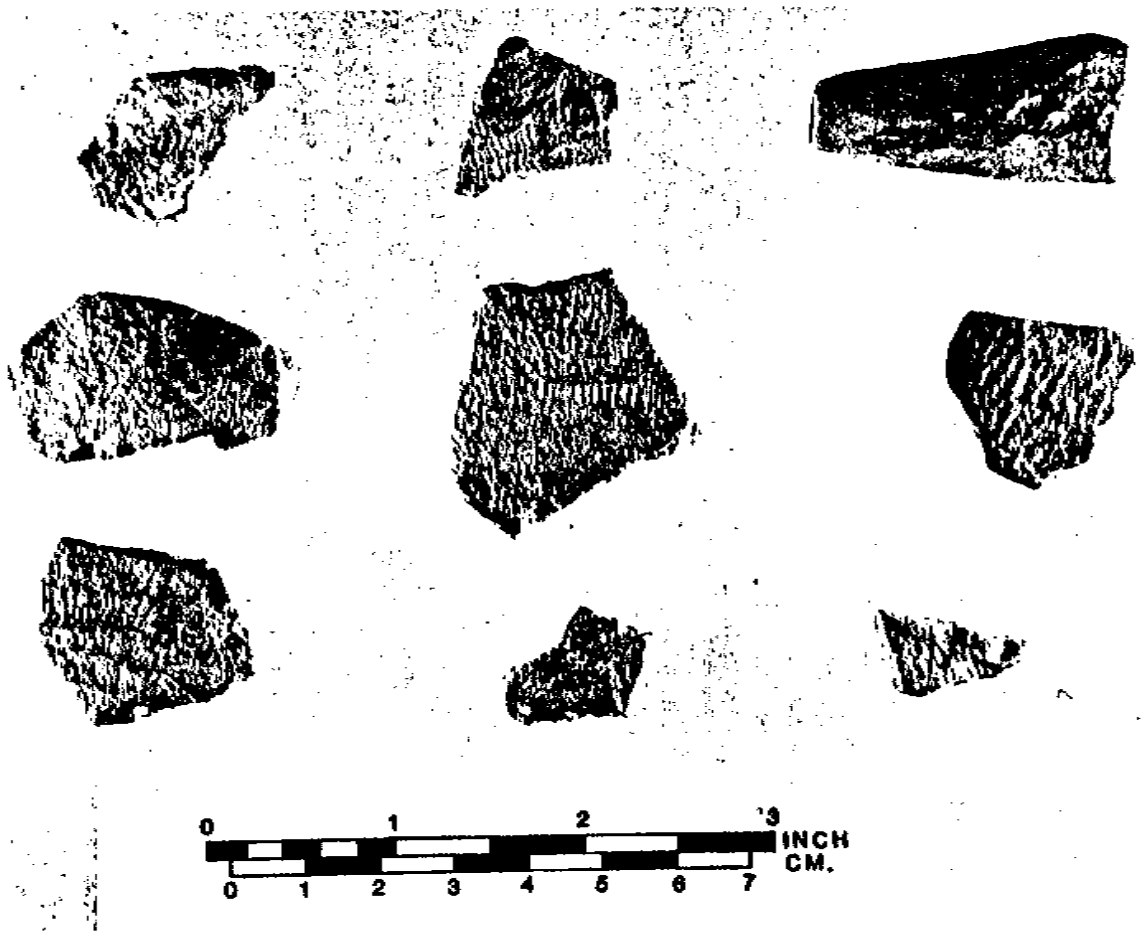


PLATE 6

Selected Prehistoric Ceramics from Sites in the Route 13 North Survey



TOP ROW, LEFT TO RIGHT: Wolfe Neck sherd from 7NC-H-21, Minguannan sherd from 7NC-G-62, Woodland II pipestem from 7NC-G-62; MIDDLE ROW, TOP TO BOTTOM: Minguannan sherd from 7NC-G-60, Minguannan sherd from 7NC-G-63, Minguannan sherd from 7NC-G-60, BOTTOM ROW: Minguannan sherds from 7NC-G-62.

summary of settings and artifacts.

No hearths, storage facilities, or other features were found in any of the test units, but the presence of late stage bifaces, ceramic vessel fragments, and the ceramic pipestem fragment suggest that these sites were probably base camps.

Blackbird Area - Surface Survey. Figure 16 shows the sites discovered in the Blackbird area along with the identified sub-areas. Table 6 shows the locational data for the sites and Table 7 shows the cultural-historical data. The Blackbird area includes the Blackbird drainage between Townsend and Smyrna, Delaware. Included are segments of Barlow, Sandom, and Herring Run Branches, as well as numerous unnamed tributaries. Also present is part of the Sawmill Branch of the Smyrna River. The survey area comprises about 12 square miles and is characterized by headlands along the major streams which are dissected by the branching tributaries.

Current land use includes corn and soybean agriculture interspersed with woodlots and non-subdivision single family housing. Sheet erosion appears less evident here than in the other study areas and perhaps correspondingly no-till farming is less common. The salient topographic feature within the Blackbird area is the bay/basin feature (Rasmussen 1958), a shallow pond-like depression usually oval in outline (although some may be circular or irregular) which may have a maximum width of 40 to 250 meters rim to rim and average depth of 3 meters below the rim (see Plate 7 and 8). Many hold water, even into the very dry times of the year, although it has not been determined what percentage of the impounded water is surface runoff and what is ground water seepage. Several hundred were observed within the Blackbird area, both in cultivated fields and wooded sections, and many held water. Those that did not usually had been tile-drained by farmers so as to provide more arable land. For survey purposes, no distinction was made between wet and dry bay/basin features.

Approximately 87% of the surveyed bay/basin features in the Blackbird area were associated with prehistoric materials and several large sites included clusters of several features within their limits. One hundred and eighty-seven loci were noted during the pedestrian survey. Of these, one was a previously recorded site which had its surface limits expanded (7NC-H-8). Another 18 were determined to be unworthy of "site" designation due to a low artifact count (1 flake) or a heavily disturbed context. One hundred and sixty-eight new sites were recorded with the BAHP.

Subarea 1. This subarea is entirely woodlot with the exception of the DiGiovanni farm on the south side of Herring Run. The farm had been tilled but was observed too late in the season to allow for pedestrian survey. Mrs. DiGiovanni exhibited two corner-notched quartz bifaces (early Woodland I) which she found in her vegetable garden south of the farmhouse.

FIGURE 16

Sites and Subareas – Blackbird Study Area

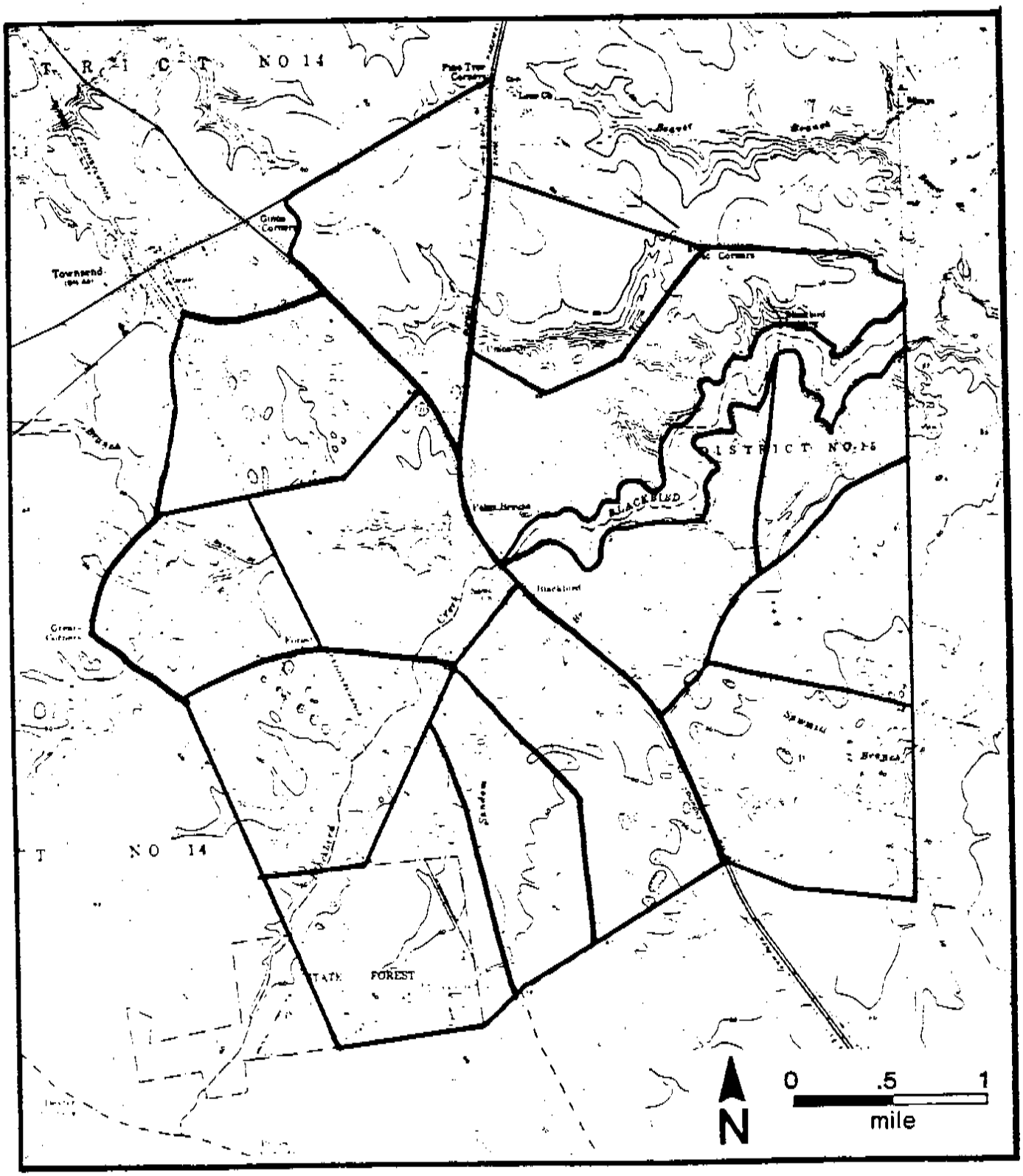


TABLE [illegible]. LOCATIONAL DATA - BLACKBIRD AREA

SITE NUMBER	F.S. NUMBER	USGS QUAD NAME	UTM NORTH	UTM EAST	GEOMORPHOLOGICAL SETTING	PRIMARY SOIL SERIES	SECONDARY SOIL SERIES	DRAINAGE	SURFACE WATER SETTING	CONF.	WATER DISTANCE (METERS)	SLOPE	ASPECT	ELEVATION
7NC-H-11	N9677	MIDDLETOWN	4360580	442770	BAY/BASIN	Fs		BLACKBIRD	BAY/BASIN	N	61	0		18
7NC-H-12	N9678	MIDDLETOWN	4360420	442940	BAY/BASIN	Ps		BLACKBIRD	BAY/BASIN	N	46	0		18
7NC-H-13	N9679	MIDDLETOWN	4360400	441900	BAY/BASIN	Fs		BLACKBIRD	BAY/BASIN	N	46	0		18
7NC-J-17	N9756	MIDDLETOWN	4360050	443220	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	Y	30	2	S	15
7NC-J-18	N9757	MIDDLETOWN	4360030	443320	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	152	2	S	15
7NC-J-19	N9758	MIDDLETOWN	4360230	443220	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	23	2		15
7NC-J-20	N9759	MIDDLETOWN	4360560	444610	BAY/BASIN	WoB2		BLACKBIRD	BAY/BASIN/STR	N	91	2		15
7NC-J-21	N9760	MIDDLETOWN	4360430	444500	BAY/BASIN	WoB2		BLACKBIRD	BAY/BASIN/STR	N	12	2		15
7NC-J-22	N9761	MIDDLETOWN	4360590	444320	HEADLAND	Fs		BLACKBIRD	STREAM	N	61	0	SW	12
7NC-J-23	N9762	MIDDLETOWN	4360450	444260	HEADLAND	Fs		BLACKBIRD	STREAM	Y	15	0	S	11
7NC-J-24	N9763	MIDDLETOWN	4360410	444100	HEADLAND	Fs		BLACKBIRD	STREAM	Y	23	0	S	11
7NC-J-25	N9764	MIDDLETOWN	4360260	444200	HEADLAND	Fs		BLACKBIRD	STREAM	N	12	0	S	9
7NC-J-26	N9765	MIDDLETOWN	4360320	444160	HEADLAND	Fs		BLACKBIRD	STREAM	N	37	0	S	12
7NC-J-27	N9766	MIDDLETOWN	4361100	443320	BAY/BASIN	Fs		BLACKBIRD	BAY/BASIN	N	15	0		18
7NC-J-28	N9767	MIDDLETOWN	4359980	445870	HEADLAND	SaC2		BLACKBIRD	STREAM	N	122	5	E	6
7NC-J-29	N9768	MIDDLETOWN	4359890	445880	HEADLAND	SaC2		BLACKBIRD	STREAM	N	61	5	SE	6
7NC-J-30	N9769	MIDDLETOWN	4359900	445820	HEADLAND	SaB2	SaC2	BLACKBIRD	STREAM	N	61	2	S	6
7NC-J-31	N9770	MIDDLETOWN	4360140	444840	BAY/BASIN	SaB2	WoB2	BLACKBIRD	BAY/BASIN/STR	N	6	2	SE	15
7NC-J-32	N9771	MIDDLETOWN	4360220	445030	HEADLAND	SaB2	WoB2	BLACKBIRD	STREAM	N	61	2	SE	15
7NC-J-33	N9772	MIDDLETOWN	4359960	444350	HEADLAND	SaC3	SaB2	BLACKBIRD	STREAM	N	3	5	SW	9
7NC-J-34	N9773	MIDDLETOWN	4359750	444560	HEADLAND	SaC3	WoB2	BLACKBIRD	STREAM	N	122	5	S	9
7NC-J-35	N9774	MIDDLETOWN	4360120	444580	BAY/BASIN	WoB2		BLACKBIRD	BAY/BASIN/STR	N	122	2	S	15
7NC-J-36	N9775	MIDDLETOWN	4359840	444700	BAY/BASIN	SaB2	WoB2	BLACKBIRD	BAY/BASIN/STR	N	30	2	SW	15
7NC-J-37	N9776	MIDDLETOWN	4359620	444910	HEADLAND	SaB2		BLACKBIRD	STREAM	N	0	2	S	3
7NC-J-38	N9777	MIDDLETOWN	4360080	445190	HEADLAND	SaB2		BLACKBIRD	STREAM	N	30	2	S	9
7NC-J-39	N9778	MIDDLETOWN	4359950	445100	HEADLAND	SaB2		BLACKBIRD	STREAM	N	79	2	SE	12
7NC-J-40	N9779	MIDDLETOWN	4359780	445020	HEADLAND	SaC2		BLACKBIRD	STREAM	N	61	5	E	9
7NC-J-41	N9780	MIDDLETOWN	4359090	444990	HEADLAND	SaC2		BLACKBIRD	STREAM	N	9	5	SE	12
7NC-H-14	N9680	MIDDLETOWN	4360120	440810	BAY/BASIN	SaB2	WsA	BLACKBIRD	BAY/BASIN	N	0	2	SE	18
7NC-H-15	N9681	MIDDLETOWN	4359960	441080	BAY/BASIN	SaB2	WsA	BLACKBIRD	BAY/BASIN/STR	N	0	2	SE	18
7NC-H-16	N9682	MIDDLETOWN	4359770	441040	BAY/BASIN	SaB2	[illegible]	BLACKBIRD	BAY/BASIN/STR	N	0	2	SE	18
7NC-H-17	N9683	MIDDLETOWN	4359800	441160	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN/STR	N	0	2	E	18
7NC-H-18	N9684	MIDDLETOWN	4360140	441290	SAND RIDGE	SaB2		BLACKBIRD	SPRINGHEAD	N	6	2	S	18
7NC-H-19	N9685	MIDDLETOWN	4360030	441320	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN/STR	N	6	2	SW	10
7NC-H-20	N9686	MIDDLETOWN	4359000	441860	BAY/BASIN	WoB2		BLACKBIRD	BAY/BASIN	N	30	2	SW	17
7NC-H-21	N9687	MIDDLETOWN	4359090	441740	BAY/BASIN	Jo		BLACKBIRD	BAY/BASIN/STR	N	30	0	SW	14
7NC-J-42	N9781	MIDDLETOWN	4359770	443060	HEADLAND	SaB2		BLACKBIRD	STREAM	N	30	2	S	12
7NC-J-43	N9782	MIDDLETOWN	4359770	443290	HEADLAND	KeB2		BLACKBIRD	STREAM	N	61	2	S	12
7NC-J-44	N9783	MIDDLETOWN	4359560	443790	HEADLAND	KeB2		BLACKBIRD	STREAM	Y	61	2	S	12
7NC-J-45	N9784	MIDDLETOWN	4359670	443560	HEADLAND	SaB2		BLACKBIRD	STREAM	N	91	2	S	12
7NC-J-46	N9785	MIDDLETOWN	4359570	443520	HEADLAND	SaB2		BLACKBIRD	STREAM	N	91	2	S	12
7NC-J-47	N9786	MIDDLETOWN	4359920	443420	BAY/BASIN	WoA	SaB2	BLACKBIRD	BAY/BASIN	N	0	0	S	15
7NC-J-48	N9787	MIDDLETOWN	4359540	443270	HEADLAND	KeB2	FaA	BLACKBIRD	STREAM	Y	30	2	S	12
7NC-J-49	N9788	MIDDLETOWN	4358790	442940	BAY/BASIN	KeB2		BLACKBIRD	BAY/BASIN	N	8	2	SE	15
7NC-J-50	N9789	MIDDLETOWN	4359200	443120	BAY/BASIN	WoB2	SaB2	BLACKBIRD	BAY/BASIN	N	6	2	SW	18
7NC-J-51	N9790	MIDDLETOWN	4359300	443150	BAY/BASIN	Fa	Bo	BLACKBIRD	BAY/BASIN	N	15	2	SW	18
7NC-J-52	N9791	MIDDLETOWN	4359200	443240	BAY/BASIN	Pa		BLACKBIRD	BAY/BASIN	N	8	2	S	18
7NC-J-53	N9792	MIDDLETOWN	4359260	443350	BAY/BASIN	WsA		BLACKBIRD	BAY/BASIN	N	46	0		15
7NC-J-54	N9793	MIDDLETOWN	4359100	443340	BAY/BASIN	Fa	SaB2	BLACKBIRD	BAY/BASIN	N	46	0	N	18
7NC-J-55	N9794	MIDDLETOWN	4359350	443360	BAY/BASIN	WsA		BLACKBIRD	BAY/BASIN	N	15	0		18

TABLE [illegible]

SITE NUMBER	CRS NUMBER	USGS QUAD NAME	UTM NORTH	UTM EAST	GEOMORPHOLOGICAL SETTING	PRIMARY SOIL SERIES	SECONDARY SOIL SERIES	DRAINAGE	SURFACE WATER SETTING	CONF.	WATER DISTANCE (METERS)	SLOPE	ASPECT	ELEVATION
7NC-J-56	N9795	MIDDLETOWN	4359340	443580	BAY/BASIN	MeB2	WoA	BLACKBIRD	BAY/BASIN	N	0	2	SE	15
7NC-J-57	N9796	MIDDLETOWN	4359060	443530	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	61	2	S	15
7NC-J-58	N9797	MIDDLETOWN	4359800	443580	BAY/BASIN	WoB2		BLACKBIRD	BAY/BASIN	N	30	0	S	15
7NC-J-59	N9798	MIDDLETOWN	4359980	443660	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	15	2	S	15
7NC-J-60	N9799	MIDDLETOWN	4359100	443700	BAY/BASIN	SaB2	WoA	BLACKBIRD	BAY/BASIN	N	0	2	SE	15
7NC-J-61	N9800	MIDDLETOWN	4359200	443500	BAY/BASIN	WoA	SaB2	BLACKBIRD	BAY/BASIN	N	3	0	S	17
7NC-J-62	N9801	MIDDLETOWN	4359330	443640	BAY/BASIN	EmA	SaB2	BLACKBIRD	BAY/BASIN	N	76	0	NW	15
7NC-J-64	N9803	MIDDLETOWN	4359300	444580	HEADLAND	SaB2	FmA	BLACKBIRD	STREAM	Y	91	2	SE	15
7NC-J-65	N9804	MIDDLETOWN	4359360	444360	HEADLAND	SaB2	EmA	BLACKBIRD	STREAM	N	3	2	SE	15
7NC-J-66	N9805	MIDDLETOWN	4359350	444180	HEADLAND	EmA		BLACKBIRD	STREAM	N	122	0	SE	15
7NC-J-67	N9806	MIDDLETOWN	4359550	444220	HEADLAND	SaB2		BLACKBIRD	STREAM	N	183	2	NE	15
7NC-J-68	N9807	MIDDLETOWN	4359620	444020	INTERIOR FLAT	SaB2		BLACKBIRD	STREAM	N	30	2	N	15
7NC-H-22	N9688	CLAYTON	4357600	440420	SAND RIDGE	RuB2		BLACKBIRD	STREAM	N	61	2	W	15
7NC-H-23	N9689	CLAYTON	4357460	440560	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	15	2	W	15
7NC-H-24	N9690	CLAYTON	4357720	440500	SAND RIDGE	RuB2		BLACKBIRD	STREAMS	N	122	2		12
7NC-H-25	N9691	CLAYTON	4357580	440550	BAY/BASIN	RuC2		BLACKBIRD	BAY/BASIN	N	122	5	W	17
7NC-H-26	N9692	CLAYTON	4357640	440590	BAY/BASIN	RuC2		BLACKBIRD	BAY/BASIN	N	244	5	N	15
7NC-H-27	N9693	CLAYTON	4357660	440700	BAY/BASIN	RuC2		BLACKBIRD	BAY/BASIN	N	244	5	NW	18
7NC-H-28	N9694	CLAYTON	4357350	440730	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	15	2	W	18
7NC-H-29	N9695	CLAYTON	4357500	440780	BAY/BASIN	RuC2		BLACKBIRD	BAY/BASIN	N	183	5	W	18
7NC-H-30	N9696	CLAYTON	4357750	440740	BAY/BASIN	RuC2		BLACKBIRD	BAY/BASIN/STR	N	122	5	NW	18
7NC-H-31	N9697	CLAYTON	4357000	440000	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	15	2	NW	15
7NC-H-32	N9698	CLAYTON	4357700	441050	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	76	2	NE	17
7NC-H-33	N9699	CLAYTON	4357700	440800	HEADLAND	SaB2		BLACKBIRD	STREAM	Y	15	2	E	12
7NC-H-34	N9700	CLAYTON	4358300	441140	HEADLAND	Jo		BLACKBIRD	STREAM	N	61	0	S	8
7NC-H-35	N9701	CLAYTON	4357920	441800	BAY/BASIN	Fa		BLACKBIRD	BAY/BASIN	N	3	0	E	10
7NC-H-36	N9702	CLAYTON	4357980	441760	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	53	2		17
7NC-H-37	N9703	CLAYTON	4358090	441900	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	30	2		17
7NC-H-38	N9704	CLAYTON	4358280	441850	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	122	2	N	12
7NC-H-39	N9705	CLAYTON	4358120	442110	BAY/BASIN	SaB2	WoA	BLACKBIRD	BAY/BASIN	N	0	2	NE	15
7NC-H-40	N9706	CLAYTON	4358010	441940	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	0	2		17
7NC-H-41	N9707	CLAYTON	4357840	442200	HEADLAND	SaB2		BLACKBIRD	STREAM	N	183	2	SE	14
7NC-H-42	N9708	CLAYTON	4357850	442520	HEADLAND	SaB2		BLACKBIRD	STREAM	N	122	2	E	11
7NC-H-43	N9709	CLAYTON	4357710	442420	HEADLAND	SaB2		BLACKBIRD	STREAM	N	91	2	SE	11
7NC-H-44	N9710	CLAYTON	4357580	442350	HEADLAND	SaB2		BLACKBIRD	STREAM	N	30	2	E	3
7NC-H-45	N9711	CLAYTON	4357540	442130	HEADLAND	WoA	SaB2	BLACKBIRD	STREAM	N	30	0	S	12
7NC-H-46	N9712	CLAYTON	4357660	442150	HEADLAND	SaB2		BLACKBIRD	STREAM	N	152	2	E	15
7NC-H-47	N9713	CLAYTON	4358260	441360	FLOODPLAIN	SaB2	SaC3	BLACKBIRD	STREAM	Y	9	2	N	9
7NC-H-48	N9714	CLAYTON	4357960	441440	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	244	2	E	10
7NC-H-49	N9715	CLAYTON	4357640	441570	BAY/BASIN	Fa		BLACKBIRD	BAY/BASIN	N	0	0	SE	10
7NC-H-50	N9716	CLAYTON	4358160	441610	BAY/BASIN	WoA		BLACKBIRD	BAY/BASIN/STR	N	122	0	NW	15
7NC-H-51	N9717	CLAYTON	4358120	441720	HEADLAND	WoA	SaB2	BLACKBIRD	BAY/BASIN/STR	N	122	0	N	15
7NC-H-52	N9718	CLAYTON	4358040	441730	BAY/BASIN	Fa		BLACKBIRD	BAY/BASIN	N	107	0		17
7NC-H-53	N9719	MIDDLETOWN	4358740	442550	HEADLAND	Fa		BLACKBIRD	STREAM	N	61	0	S	12
7NC-H-54	N9720	MIDDLETOWN	4358550	442440	HEADLAND	SaB2		BLACKBIRD	STREAM	Y	122	2	S	12
7NC-H-55	N9721	MIDDLETOWN	4358680	442240	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	15	2	S	17
7NC-H-56	N9722	MIDDLETOWN	4358450	442260	HEADLAND	SaB2		BLACKBIRD	STREAM	Y	61	2	S	12
7NC-H-57	N9723	MIDDLETOWN	4358600	442180	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	0	2	S	15
7NC-H-58	N9724	MIDDLETOWN	4358560	442180	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN/STR	N	244	2	S	15
7NC-H-59	N9725	MIDDLETOWN	4358560	442000	HEADLAND	SaB2		BLACKBIRD	SPRINGHEAD	N	15	2	S	12

TABLE 6 cont'd

SITE NUMBER	CRS NUMBER	USGS QUAD NAME	UTM NORTH	UTM EAST	GEOMORPHOLOGICAL SETTING	PRIMARY SOIL SERIES	SECONDARY SOIL SERIES	DRAINAGE	SURFACE WATER SETTING	CONF.	WATER DISTANCE (METERS)	SLOPE	ASPECT	ELEVATION
7NC-H-60	N9726	MIDDLETOWN	4358460	441940	HEADLAND	SaB2		BLACKBIRD	STREAM	Y	91	2	S	12
7NC-H-61	N9727	MIDDLETOWN	4358700	441990	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	6	2	S	17
7NC-H-62	N9728	MIDDLETOWN	4358700	442130	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	15	2	S	17
7NC-H-63	N9729	MIDDLETOWN	4358800	442260	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	30	2	S	17
7NC-H-64	N9730	MIDDLETOWN	4358680	441570	HEADLAND	SaB2		BLACKBIRD	STREAM	N	91	2	S	12
7NC-H-65	N9731	MIDDLETOWN	4358650	442200	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	15	2	SE	15
7NC-H-66	N9732	MIDDLETOWN	4358620	441750	HEADLAND	SaB2		BLACKBIRD	STREAMS	Y	15	2	S	11
7NC-H-67	N9733	MIDDLETOWN	4358460	441800	HEADLAND	SaB2	Fa	BLACKBIRD	STREAM	Y	15	2	S	8
7NC-H-[illegible]	N[illegible]36	MIDDLETOWN	4358460	441880	HEADLAND	SaB2	SaB2	BLACKBIRD	STREAM	Y	15	2	S	9
7NC-H-68	N9734	MIDDLETOWN	4358630	441820	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN/STR	N	183	2	S	15
7NC-H-69	N9735	MIDDLETOWN	4358540	441840	HEADLAND	SaB2		BLACKBIRD	BAY/BASIN/STR	N	152	2	SW	14
7NC-H-88	N9754	MIDDLETOWN	4358420	441280	HEADLAND	Fa		BLACKBIRD	STREAM	Y	244	0	S	15
7NC-H-89	N9755	MIDDLETOWN	4358620	441100	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN/STR	N	91	2	S	15
7NC-H-70	N9736	MIDDLETOWN	4358450	442440	HEADLAND	Fa		BLACKBIRD	STREAM	Y	122	0	S	9
7NC-H-71	N9737	MIDDLETOWN	4358540	442570	HEADLAND	SaC2		BLACKBIRD	STREAM	N	9	5	S	6
7NC-H-72	N9738	CLAYTON	4357030	440380	BAY/BASIN	RuB2	EaA	BLACKBIRD	BAY/BASIN	N	30	2	S	18
7NC-H-73	N9739	CLAYTON	4357140	440550	BAY/BASIN	RuB2		BLACKBIRD	BAY/BASIN	N	46	2		18
7NC-H-74	N9740	CLAYTON	4356500	440580	BAY/BASIN	Fa		BLACKBIRD	BAY/BASIN	N	61	0	N	18
7NC-H-75	N9741	CLAYTON	4356910	440540	BAY/BASIN	RuB2		BLACKBIRD	BAY/BASIN	N	122	2	N	18
7NC-H-76	N9742	CLAYTON	4356060	441140	BAY/BASIN	Fa	RuB2	BLACKBIRD	BAY/BASIN/STR	N	0	0	N	15
7NC-H-77	N9743	CLAYTON	4356130	441520	FLOODPLAIN	RuB2		BLACKBIRD	STREAM	N	61	2	E	14
7NC-H-78	N9744	CLAYTON	4355050	441470	HEADLAND	RuB2	Fa	BLACKBIRD	STREAM	N	30	2	E	14
7NC-H-79	N9745	CLAYTON	4355840	441300	BAY/BASIN	RuB2		BLACKBIRD	BAY/BASIN/STR	N	61	2		17
7NC-H-80	N9746	CLAYTON	4355850	441200	BAY/BASIN	RuB2		BLACKBIRD	BAY/BASIN/STR	N	61	2	E	18
7NC-H-81	N9747	CLAYTON	4357000	440980	BAY/BASIN	Fa		BLACKBIRD	BAY/BASIN/STR	N	15	0		17
7NC-H-82	N9748	CLAYTON	4357180	441120	BAY/BASIN	Fa		BLACKBIRD	BAY/BASIN	N	61	0		17
7NC-H-83	N9749	CLAYTON	4356960	441100	BAY/BASIN	Fa		BLACKBIRD	BAY/BASIN	N	30	0	S	15
7NC-H-84	N9750	CLAYTON	4357040	441090	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	30	2	S	17
7NC-H-85	N9751	CLAYTON	4357100	440990	BAY/BASIN	Fa		BLACKBIRD	BAY/BASIN	N	38	0	S	18
7NC-H-86	N9752	CLAYTON	4357020	440960	BAY/BASIN	RuB2		BLACKBIRD	BAY/BASIN/STR	N	30	2	S	17
7NC-H-87	N9753	CLAYTON	4356640	441550	HEADLAND	Fa		BLACKBIRD	STREAM	Y	61	2	S	12
7NC-J-69	N9808	CLAYTON	4358060	444140	HEADLAND	Fa	SaC2	BLACKBIRD	SPRINGHEAD	N	6	0	W	12
7NC-J-70	N9809	CLAYTON	4357700	444530	BAY/BASIN	Fa	SaB2	BLACKBIRD	BAY/BASIN	N	9	0	S	15
7NC-J-71	N9810	CLAYTON	4357610	444540	BAY/BASIN	SaC2		BLACKBIRD	BAY/BASIN	N	3	5		15
7NC-J-72	N9811	CLAYTON	4357600	444210	HEADLAND	SaC2		BLACKBIRD	STREAM	N	91	5	W	12
7NC-J-73	N9812	CLAYTON	4357620	444440	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	30	2	W	15
7NC-J-74	N9813	CLAYTON	4358240	443900	BAY/BASIN	SaB2	SaC2	BLACKBIRD	BAY/BASIN	Y	0	2	W	9
7NC-J-75	N9814	CLAYTON	4358130	443800	HEADLAND	SaB2		BLACKBIRD	STREAM	Y	0	2	W	6
7NC-J-76	N9815	CLAYTON	4357890	443900	BAY/BASIN	SaC2		BLACKBIRD	BAY/BASIN	N	0	5	W	12
7NC-J-77	N9816	CLAYTON	4358000	443760	HEADLAND	SaC2		BLACKBIRD	BAY/BASIN/STR	Y	0	5		5
7NC-J-78	N9817	CLAYTON	4357920	444030	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	15	2	W	15
7NC-J-79	N9818	CLAYTON	4358190	444100	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	6	2	NW	12
7NC-J-80	N9819	CLAYTON	4358040	444360	BAY/BASIN	Fa	SaC2	BLACKBIRD	BAY/BASIN	N	0	0	NW	15
7NC-J-81	N9820	CLAYTON	4358300	444080	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN/STR	N	91	2	N	12
7NC-J-82	N9821	CLAYTON	4357880	444620	BAY/BASIN	Fa		BLACKBIRD	BAY/BASIN	N	12	0	N	15
7NC-J-83	N9822	CLAYTON	4358020	444500	BAY/BASIN	WaA		BLACKBIRD	BAY/BASIN	N	183	0	N	15
7NC-J-84	N9823	CLAYTON	4354920	442900	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	15	2	NW	15
7NC-J-85	N9824	CLAYTON	4354790	442930	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	0	2	N	18
7NC-J-86	N9825	CLAYTON	4354990	443460	BAY/BASIN	Fa		BLACKBIRD	BAY/BASIN	N	30	0		18
7NC-J-87	N9826	CLAYTON	4355100	443420	BAY/BASIN	Fa	SaB2	BLACKBIRD	BAY/BASIN	N	0	0		18

Site Number	LFS Number	USGS Quad Name	UTM North	UTM East	Geomorphological Setting	Primary Soil Series	Secondary Soil Series	Drainage	Surface Water Setting	Conf.	Water Distance (Meters)	Slope	Aspect	Elevation
7NC-J-88	N9827	CLAYTON	4357130	442540	BAY/BASIN	SaB2	Fa	BLACKBIRD	BAY/BASIN	N	46	2	W	15
7NC-J-89	N9828	CLAYTON	4355680	443080	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	23	2		18
7NC-J-90	N9829	CLAYTON	4355460	443800	BAY/BASIN	Fa	[illegible]	BLACKBIRD	BAY/BASIN	N	8	0	E	18
7NC-J-91	N9830	CLAYTON	4355210	443820	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	91	2	E	18
7NC-J-92	N9831	CLAYTON	4358260	443770	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN/STR	N	21	2	SW	12
7NC-J-93	N9832	CLAYTON	4358160	443760	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN/STR	N	12	2	SW	12
7NC-J-94	N9833	CLAYTON	4356450	444260	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN/STR	N	15	2	N	15
7NC-J-95	N9834	CLAYTON	4356260	444200	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN/STR	N	6	2	W	12
7NC-J-96	N9835	CLAYTON	4356400	444150	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	23	2	N	15
7NC-J-97	N9836	CLAYTON	4356100	444000	BAY/BASIN	SaB2	Fa	BLACKBIRD	BAY/BASIN	N	15	2	W	18
7NC-J-98	N9837	CLAYTON	4356330	443920	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	244	2	N	15
7NC-J-99	N9838	CLAYTON	4356200	444100	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	91	2	N	17
7NC-J-100	N9839	CLAYTON	4356070	444340	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN	N	0	2	SE	15
7NC-J-101	N9840	CLAYTON	4355920	444350	BAY/BASIN	SaB2		BLACKBIRD	BAY/BASIN/STR	N	122	2	SE	15
7NC-J-102	N9841	CLAYTON	4355840	445330	BAY/BASIN	Fa	SaB2	BLACKBIRD	BAY/BASIN/STR	Y	15	0	S	12
7NC-J-103	N9842	CLAYTON	4356060	445500	BAY/BASIN	SaB2	WaA	SMYRNA	BAY/BASIN/STR	N	0	2	E	12
7NC-J-104	N9843	CLAYTON	4355950	445410	BAY/BASIN	WaA	SaB2	SMYRNA	BAY/BASIN/STR	N	30	0	E	12
7NC-J-105	N9844	CLAYTON	4355680	446100	BAY/BASIN	EmA	SaB2	SMYRNA	BAY/BASIN	N	0	0	NW	15
7NC-J-106	N9845	CLAYTON	4355400	446060	BAY/BASIN	SaB2		SMYRNA	BAY/BASIN	N	137	2		15
7NC-J-107	N9846	CLAYTON	4355440	445840	BAY/BASIN	Fa	SaB2	SMYRNA	BAY/BASIN/STR	N	183	0	W	15
7NC-J-[illegible]	N9847	CLAYTON	4355700	445600	BAY/BASIN	EmA	SaB2	SMYRNA	BAY/BASIN/STR	N	15	0	W	12
7NC-J-109	N9848	CLAYTON	4355020	445600	BAY/BASIN	SaB2		SMYRNA	BAY/BASIN/STR	N	91	2	W	12
7NC-J-110	N9849	CLAYTON	4355820	445600	BAY/BASIN	SaB2	Fa	SMYRNA	BAY/BASIN	N	3	2		18
7NC-J-111	N9850	MIDDLETOWN	4358880	445650	HEADLAND	SaB2		BLACKBIRD	STREAM	N	244	2	N	12
7NC-J-112	N9851	MIDDLETOWN	4358980	445840	HEADLAND	SaB2		BLACKBIRD	STREAM	N	122	2	W	9
7NC-J-113	N9852	MIDDLETOWN	4358850	445700	HEADLAND	Of		BLACKBIRD	STREAM	N	183	0		5
7NC-J-114	N9853	CLAYTON	4356960	446060	BAY/BASIN	SaB2		SMYRNA	BAY/BASIN	N	61	2	W	15
7NC-J-115	N9854	CLAYTON	4357230	446040	HEADLAND	WaB2		SMYRNA	STREAM	N	30	2	SE	12
7NC-J-116	N9855	SMYRNA	4356400	446030	HEADLAND	Fa		SMYRNA	STREAM	N	30	0	NE	12
7NC-J-117	N9856	SMYRNA	4356900	446250	HEADLAND	MeB2	MeC2	SMYRNA	STREAM	Y	122	2	E	9

TABLE 21 CULTURAL-HISTORICAL DATA - BLACKBIRD AREA

SITE NUMBER	PALEO	ARCHAIC	WOODLAND I	WOODLAND II	CF	BL	AN	LA	WB	DA	DC	SC	MG	HISTORIC	BIFACE	SCRAPER	FLAKE TOOL	CORE	FLAKES	GROUND STONE TOOL	FCR	CERAMICS
2NO-H-11																			Y			
2NO-H-12			Y								Y				Y				Y			
2NO-H-13															Y							
2NO-J-17																	Y	Y	Y			
2NO-J-18																			Y			
2NO-J-19																			Y			
2NO-J-20																	Y		Y			
2NO-J-21																			Y			
2NO-J-22																			Y			
2NO-J-23														Y								
2NO-J-24														Y					Y			
2NO-J-25														Y					Y			
2NO-J-26														Y								
2NO-J-27																			Y			
2NO-J-28															Y				Y			
2NO-J-29															Y							
2NO-J-30																			Y			
2NO-J-31			Y												Y	Y	Y	Y	Y		Y	
2NO-J-32			Y	Y									Y		Y	Y	Y	Y	Y		Y	
2NO-J-33			Y												Y	Y	Y	Y	Y		Y	
2NO-J-34															Y				Y			
2NO-J-35															Y		Y		Y		Y	
2NO-J-36																	Y		Y			
2NO-J-37																			Y			
2NO-J-38														Y							Y	
2NO-J-39														Y					Y		Y	
2NO-J-40																Y			Y			
2NO-J-41														Y					Y		Y	
2NO-H-14			Y		Y										Y	Y	Y	Y	Y			
2NO-H-15			Y												Y		Y		Y			
2NO-H-16																	Y		Y			
2NO-H-17																		Y	Y			
2NO-H-18			Y		Y										Y		Y	Y	Y			
2NO-H-19																Y			Y			
2NO-H-20																			Y		Y	
2NO-H-21				Y									Y						Y			Y
2NO-J-42																			Y			
2NO-J-43																Y			Y			
2NO-J-44															Y	Y	Y		Y		Y	
2NO-J-45																			Y			
2NO-J-46															Y			Y	Y			
2NO-J-47			Y	Y									Y		Y		Y		Y			
2NO-J-48																Y			Y			
2NO-J-49														Y					Y			
2NO-J-50														Y	Y	Y	Y		Y		Y	
2NO-J-51																			Y		Y	
2NO-J-52																			Y			
2NO-J-53																			Y		Y	
2NO-J-54			Y	Y									Y		Y	Y		Y	Y		Y	
2NO-J-55																			Y			
2NO-J-56																			Y			
2NO-J-57															Y				Y			
2NO-J-58																			Y			
2NO-J-59																Y	Y		Y		Y	
2NO-J-60																	Y	Y	Y		Y	
2NO-J-61			Y												Y		Y		Y			
2NO-J-62															Y				Y		Y	
2NO-J-64																			Y			
2NO-J-65			Y												Y				Y		Y	
2NO-J-66																			Y			

TABLE 2 (cont)

SITE NUMBER	PALEO	ARCHAIC	WOODLAND I	WOODLAND II	CF	BI	UN	CA	WB	DA	OP	SC	MG	HISTORIC	BIFACE	SCRAPER	FLAKE TOOL	CORE	FLAKES	GROUND STONE TOOL	FCR	CERAMICS
7NC-J-62																			Y			
7NC-J-60			Y												Y							
7NC-H-22			Y												Y				Y		Y	
7NC-H-23																			Y			
7NC-H-24			Y												Y			Y	Y		Y	
7NC-H-25																	Y		Y		Y	
7NC-H-26																			Y			
7NC-H-27																			Y			
7NC-H-28															Y				Y			
7NC-H-29			Y												Y		Y		Y			
7NC-H-30															Y				Y			
7NC-H-31			Y												Y			Y	Y			
7NC-H-32			Y												Y		Y		Y		Y	
7NC-H-33			Y											Y	Y				Y		Y	
7NC-H-34														Y	Y				Y			
7NC-H-35																			Y			
7NC-H-36																			Y			
7NC-H-37																			Y			
7NC-H-38																			Y			
7NC-H-39	Y	Y	Y		Y			Y							Y	Y	Y	Y	Y		Y	
7NC-H-40			Y												Y				Y			
7NC-H-41																			Y			
7NC-H-42															Y		Y		Y			
7NC-H-43																			Y			
7NC-H-44																			Y			
7NC-H-45																			Y			
7NC-H-46																			Y			
7NC-H-47			Y		Y										Y		Y	Y	Y			
7NC-H-48															Y				Y			
7NC-H-49															Y	Y		Y	Y			
7NC-H-50																		Y	Y			
7NC-H-51			Y												Y		Y	Y	Y			
7NC-H-52																			Y			
7NC-H-53																	Y		Y			
7NC-H-54			Y												Y				Y			
7NC-H-55																			Y		Y	
7NC-H-56																	Y	Y	Y		Y	
7NC-H-57			Y												Y							
7NC-H-58																	Y		Y			
7NC-H-59																	Y	Y	Y			
7NC-H-60		Y													Y				Y		Y	
7NC-H-61																			Y			
7NC-H-62															Y		Y	Y	Y			
7NC-H-63			Y												Y							
7NC-H-64			Y												Y				Y		Y	
7NC-H-65																			Y			
7NC-H-66																	Y		Y		Y	
7NC-H-67																	Y		Y	Y	Y	
7NC-H-8																			Y			
7NC-H-68																			Y			
7NC-H-69																			Y			
7NC-H-88														Y								
7NC-H-89														Y								
7NC-H-70														Y					Y		Y	
7NC-H-71														Y					Y			
7NC-H-72																Y			Y			
7NC-H-73	Y														Y							
7NC-H-74															Y				Y			
7NC-H-75														Y								
7NC-H-76			Y											Y	Y			Y	Y		Y	

TABLE 2 (cont.)

SITE NUMBER	PALEO ARCHAIC	WOODLAND I	WOODLAND II	OF	AL	AN	CA	WB	DA	DP	SC	MG	HISTORIC	BIFACE	SCRAPER	FLAKE TOOL	CORE	FLAKES	GROUND STONE TOOL	POT	CERAMICS
ZNO-II-77														Y		Y	Y	Y		Y	
ZNO-II-78														Y			Y	Y			
ZNO-II-79		Y												Y							
ZNO-II-80		Y																Y			
ZNO-II-81		Y												Y							
ZNO-II-82																		Y			
ZNO-II-83																		Y			
ZNO-II-84														Y				Y			
ZNO-II-85												Y						Y			
ZNO-II-86																		Y		Y	
ZNO-II-87												Y		Y				Y			
ZNO-J-70			Y									Y		Y				Y			
ZNO-J-71		Y	Y													Y		Y			
ZNO-J-72														Y		Y					
ZNO-J-73		Y												Y		Y		Y			
ZNO-J-74																		Y			
ZNO-J-75																	Y	Y			
ZNO-J-76																		Y			
ZNO-J-77																		Y			
ZNO-J-78																		Y			
ZNO-J-79														Y				Y			
ZNO-J-80														Y	Y	Y		Y			
ZNO-J-81		Y														Y					
ZNO-J-82																Y					
ZNO-J-83														Y				Y			
ZNO-J-84		Y												Y	Y	Y					
ZNO-J-85		Y												Y		Y					
ZNO-J-86		Y												Y				Y			
ZNO-J-87																Y		Y			
ZNO-J-88																	Y	Y			
ZNO-J-89		Y												Y							
ZNO-J-90		Y												Y							
ZNO-J-91		Y														Y		Y			
ZNO-J-92																Y		Y			
ZNO-J-93																	Y	Y			
ZNO-J-94														Y				Y		Y	
ZNO-J-95		Y														Y		Y			
ZNO-J-96														Y			Y	Y		Y	
ZNO-J-97														Y							
ZNO-J-98														Y		Y	Y	Y		Y	
ZNO-J-99		Y													Y			Y			
ZNO-J-100																Y		Y			
ZNO-J-101														Y	Y	Y		Y			
ZNO-J-102														Y	Y	Y	Y	Y		Y	
ZNO-J-103			Y											Y	Y	Y		Y			
ZNO-J-104	Y	Y	Y											Y		Y	Y	Y		Y	
ZNO-J-105																		Y			
ZNO-J-106														Y				Y			
ZNO-J-107			Y												Y			Y			
ZNO-J-108																		Y			
ZNO-J-109												Y		Y		Y		Y	Y	Y	
ZNO-J-110			Y															Y		Y	
ZNO-J-111														Y							
ZNO-J-112			Y									Y						Y		Y	
ZNO-J-113																		Y			
ZNO-J-114														Y				Y			
ZNO-J-115																	Y	Y			
ZNO-J-116														Y		Y	Y	Y	Y	Y	
ZNO-J-117		Y																			

PLATE 7

Bay/Basin Feature on South Side of Barlow Branch, Blackbird Study Area
Site 7NC-H-39 is in foreground

PLATE 8

Tree-Filled Bay/Basin Feature, West of U.S. 13, Blackbird Study Area

Subarea 2. This subarea is mostly woodlot and contains only two surveyable locations: a fallow field east of Willey's Nursery on the east side of Rt. 13 and a soybean field west of Naylors Corners. Located in the former were 3 sites: 7NC-J-17, 18, and 19. The first two were located on small rises on the north side of Herring Run and contained flakes, flake tools, and a core. These sites were located in stubble fields and were characterized by considerable sheet erosion.

Site 7NC-J-19 is located on a 2 meter rise on the south side of a bay/basin feature and was discovered in a bulldozer scrape intended for topsoil borrow. The site consisted of 6 flakes found in the 2x7 meter scrape, a relatively dense concentration indicating a possibly intensely occupied site. Sites J-20 and 21 were small flake scatters west of Naylors Corners along an unnamed tributary to Herring Run.

Subarea 3. The fields east of Blackbird Landing Road are no-till rye and corn and offered less than 1% visibility. Nothing could be seen of previously recorded site J-15. Small bare patches were located in the rye fields which offered 5%-10% visibility and would occasionally produce a couple of flakes or a flake tool. Three of these were located on the north side of Blackbird Creek west of an unnamed tributary and were designated 7NC-J-28, 29, and 30.

Site 7NC-J-31 is a large sprawling site on the northwest side of Blackbird Creek and south/southeast of Naylors Corners. It is situated on a broad lobate rise perpendicular to the stream which is cut by several ephemeral streams and contains two bay/basin features. Measuring about 450 meters in length and from 100 to 160 meters in width, it is one of the largest sites identified in the survey. Artifacts recovered included 2 stemmed bifaces (one is Rossville-like), 9 non-diagnostic, fragmentary or rejected biface tools, 2 scrapers, 13 flake tools and utilized flakes, 1 chopping tool, 2 cores, 132 flakes, and about 2 dozen pieces of fire-cracked rock.

Site 7NC-J-32 is another large site northeast of J-31 and separated from it by an ephemeral stream. It is also located on a lobate rise and measures about 110x300 meters. Included in this collection are 2 contracting stem bifaces, 1 triangle point (see Plate 2),1 scraper, 2 biface rejects, 7 flake tools and utilized flakes, 3 cores, 1 stone hoe, 30 flakes, and fire-cracked rock. Overall, the artifacts indicate a Woodland I and II occupation.

The J-33 site is located on the north bank of Herring Run in a severely eroded plowed field. It measures roughly 75x300 meters and produced 1 stemmed quartz biface, 2 scrapers, 6 bifacial and unifacial tools, 2 cores, 26 flakes, and fire-cracked rock.

The remainder of the sites in this subarea were small surface scatters on the headlands overlooking Blackbird Creek and

Herring Run and generally yielded one or two flake tools, a few flakes and occasionally some fire-cracked rock. Sites 7NC-J-34 through 37 are included in this group.

Subarea 4. All of this subarea is wooded or broadcast-planted crops (low visibility) except for the Carter/Johnson farm immediately south-southeast of Townsend. This farm was subjected to pedestrian survey and six sites were located.

Site 7NC-H-14 is a sprawling site situated along the crest of a 0.6 meter high rise encompassing a pair of bay/basin features. It is approximately 190x250 meters in size and produced 1square stemmed point (see Plate 1), 2 contracting stemmed points, 1 rhyolite corner-notched biface (see Plate 3), 1 scraper, 1 utilized flake, 2 cores, and 34 flakes. Site 7NC-H-15 is located along the crest of a north-south oriented 2 meter high ridge with a bay/basin feature at its center. Found here were 2 stemmed points, 3 non-diagnostic biface fragments, 4 utilized flakes and flake tools, and 24 flakes. Site 7NC-H-16 was a small scatter located on an eroded rise northeast of a bay/basin feature and produced 9 flakes, one of which exhibited initial bifacial edging. Site 7NC-H-17 was directly east of H-16 and in a similar setting: northeast of a bay/basin feature on a somewhat eroded slope. One biface medial section, 3 cores, and 12 flakes were recovered. Located on a sandy, well-drained ridge at the head of a tributary to Barlow Branch, the H-18 site produced 1 stemmed biface resembling an Orient fishtail or Dry Brook variant (see Plate 1), 2 other biface fragments, 3 flake tools, 1 core, and 19 flakes. Site H-19 contained 51 mostly quartz flakes and 1 chert scraper found on a 2 meter high knoll between two ephemeral streams at the head of an unnamed tributary to Barlow Branch.

The cluster of dense surface scatters on this farm may be related to its position at the well-branched head of a stream, an area which also contains several bay/basin features. Virtually all of the slightly elevated areas on this farm contain sites, which suggests the possibility that presently defined site limits are artificially constrained by the farm's wooded boundaries.

Subarea 5. This is one of the most extensively cultivated subareas in the survey and a total of 26 prehistoric sites and 1 historic site were located. It is situated on the north side of Blackbird Creek and west of the confluence of the Creek and Herring Run.

The overall site pattern is one of extensive utilization of clusters of bay/basin features, which were usually located 0.7 to 1.6 kilometers north of Blackbird Creek, while the headlands adjacent to the floodplain produced generally smaller scatters. Bay/basin clusters were favored over isolated features. An exception to this pattern is site 7NC-J-44, located on a somewhat eroded headland above Blackbird Creek. Recovered were 4 non-diagnostic biface fragments, 1 flake scraper, 3 utilized flakes or flake tools, 49 flakes and fire-cracked rock.

Site 7NC-J-47 is situated on a large multi-lobed ridge which engulfed 3 bay/basin features and lay adjacent to a fourth. The site measured 100x200 meters and produced 2 contracting stem bifaces, 1 triangular point (see Plate 2), 1 biface reject, 1 utilized flake, and 18 other flakes. It is interesting to note that the flake to finished tool ratio present here is a relatively low 18:5, suggesting it is a procurement site. Site 7NC-J-50 is located on a 1 meter high rise situated between a large bay/basin on the west and a cluster of them on the east. Located were 2 biface fragments, 1 side/end scraper, 117 flakes, and 30-40 pieces of fire-cracked rock. Also found was a gunflint of English flint and 19th and 20th century ceramics, probably associated with the nearby farmhouse. Most of the artifacts occurred in a 12x22 meter area in the center of the site.

Site 7NC-J-54 is a horseshoe-shaped site surrounding a 100 meter diameter bay/basin feature and 2 smaller bay/basins. Four different types of bifaces were found here: 1 square stemmed jasper biface (see Plate 1), 1 corner-notched chert biface (see Plate 3), 1 rhyolite side-notched biface, and 1 quartz triangle point (see Plate 2). Also found was a chert scraper, a quartzite core, 30 flakes, and 7 pieces of fire-cracked rock. The site is a continuous scatter along about 80% of the rim, with only the southwest side devoid of artifacts.

Site J-60 is located on the rims surrounding two adjacent bay/basins. One bifacially-worked chert flake, 1 crystal quartz core, 12 flakes, and fire-cracked rock comprised this assemblage. Just west of J-60, on a small sandy rise on the south side of another bay/basin, is the J-61 site. One heavily-resharpened quartz corner notched point (see Plate 3), 1 quartz scraper, and 7 flakes were located here.

Site J-65, located on the Chester Gove farm at the confluence of Herring Run and Blackbird Creek, lies on a prominent ridge and adjacent flat area which is bisected by an ephemeral stream to Blackbird Creek. It produced two non-diagnostic biface fragments, 29 flakes, and fire-cracked rock.

Numerous other small surface scatters were located in subarea 2-5, including 7NC-J-42, 43, 45, 46, 48, 49, 51-53, 55-59, 62, 64, and 66-68. Settings included adjacent to bay/basin features, on the headlands along Blackbird Creek, and at the heads and along the lengths of ephemeral streams. Most consisted of a few flakes and non-diagnostic broken and discarded tools. Figure 16 shows the exact locations of these small surface scatters.

An historic site, J-63, was located just east of the intersection of Union Church Rd. (Rd. 456) and the Collins farm driveway. Noted on the surface were red brick fragments, late 19th and 20th century bottle glass, whiteware, ironstone, and porcelain fragments, and a 2-hole shell button. Conspicuous in their absence were redware sherds, suggesting the site is rather late. No surface features were visible. Mr. Corbit Collins, 62-

year old farmer and owner of the land on which this site is located, provided an oral account of the structure's occupant and subsequent demise. A black tenant farmhand lived in the house in 1930 when an outbreak of typhus occurred. As a preventive health measure, the tenant was evicted, the well filled in, and the house demolished. The site is now under cultivation.

Subarea 6. Subarea 2-6 is comprised of land west of the Conrail tracks and northwest of Forest (formerly Blackbird Station). Two streams, Barlow Branch and an unnamed tributary, course through and join in the eastern end of the subarea. Most of it is wooded and offered no surface visibility. The Robert Foraker farm, on the south side of the unnamed tributary, was the major exception, with eleven sites found on the 44 hectare (109 acre) tract. Several ephemeral streams cut through the field, which also contains several bay/basin features. Separating the water courses are numerous artifact-bearing knolls and ridges, many of which are moderately to severely eroded. Four sites deserve special mention and will be discussed below.

Site 7NC-H-22 is located on a west-facing sandy prong jutting out toward the unnamed tributary. Although now mostly destroyed by borrow operations and dirt motorcycle activity, the site's remnant produced 1 stemmed argillite biface, 14 flakes, and several pieces of fire-cracked rock. One contracting stem biface, 1 core, 30 flakes, and fire-cracked rock were found at 7NC-H-24, a 20x45 meter site on a rise on the south side of the unnamed tributary. Field visibility was only 20% at the time of the survey.

A third notable site on this farm is 7NC-H-29, situated on a 2.5 meter high knoll on the east side of the ephemeral stream. One broadspear-like rhyolite biface, 1 flake tool, and 6 flakes were recovered. Unfortunately this site is quite eroded. Site H-32 lies about 450 meters east of H-29 on an eroded rise on the west side of an ephemeral stream. One corner-notched biface (see Plate 3), one utilized flake, one early stage biface reject, 9 flakes, and about 30 pieces of fire-cracked rock were found. The remaining 7 sites found on the Foraker farm generally consisted of 1 or 2 tools and less than 10 flakes and were scattered about at various locations, mainly along ephemeral streams and around bay/basins. Included in this group are 7NC-H-23, 25-28, 30, and 31.

Site 7NC-H-33 will be discussed later in detail in the section on subsurface testing. It will be noted here that adjacent to the excavated woodlot section of this site, a square stemmed quartz biface and 1 flake were found at the edge of a soybean field. Due to time constraints and crop growth, this field could not be adequately surveyed.

Subarea 7. This subarea includes segments of Barlow Branch and Blackbird Creek and is almost totally composed of land owned by Charlie Carter, Bob Foraker, and William and Edward Powell of Blackbird. The last-named pair denied access to their extensive

landholdings but Carter and Foraker were most cooperative and permission was obtained. Carter and Foraker owned all of the surveyable tracts south of Barlow Branch and Carter all of that on the north side. A total of 35 new sites were recorded during the pedestrian survey and the limits of a previously recorded site, 7NC-H-8, were expanded.

The largest site found was 7NC-H-39, situated on the south side of Barlow Branch (Plate 5 and 8). About 450x100 meters in area extent, it lies on a long ridge parallel to the stream and is sandwiched between 2 bay/basins on the north side (between the ridge and the stream) and 1 on the south (see Plate 7). The ridge itself contains 3 such features. Twenty-one tools were recovered from the site, which exhibited about 30% visibility at the time of the survey. Found were one large jasper bifurcate which more closely resembles a Kirk point (see Plate 9), 1 heavily resharpened small quartzite bifurcate (see Plate 5), 3 contracting stem bifaces (1 of argillite), 1 argillite Lehigh/Koens-Crispin broadpoint, 9 non-diagnosticbroken and rejected bifacial tools, 2 flake tools, 1 bifacial scraper, 2 cores, 1 large quartz chopping tool, 153 flakes, and several dozen pieces of fire-cracked rock (see Plate 10). The Kirk and the bifurcate, as wellas the largest percentage of other artifacts and fire-cracked rock recovered from the site, were found on a 2 meter high sandy rise in the west central part. The temporal range for the site spans about 9,000 years, from about 8,000 B.C. for the Kirk point (late Paleo-Indian Period) to about 1000 A.D. for the latest occurrence of the stemmed points. Erosion is moderate and the possibility exists of intact subsurface features.

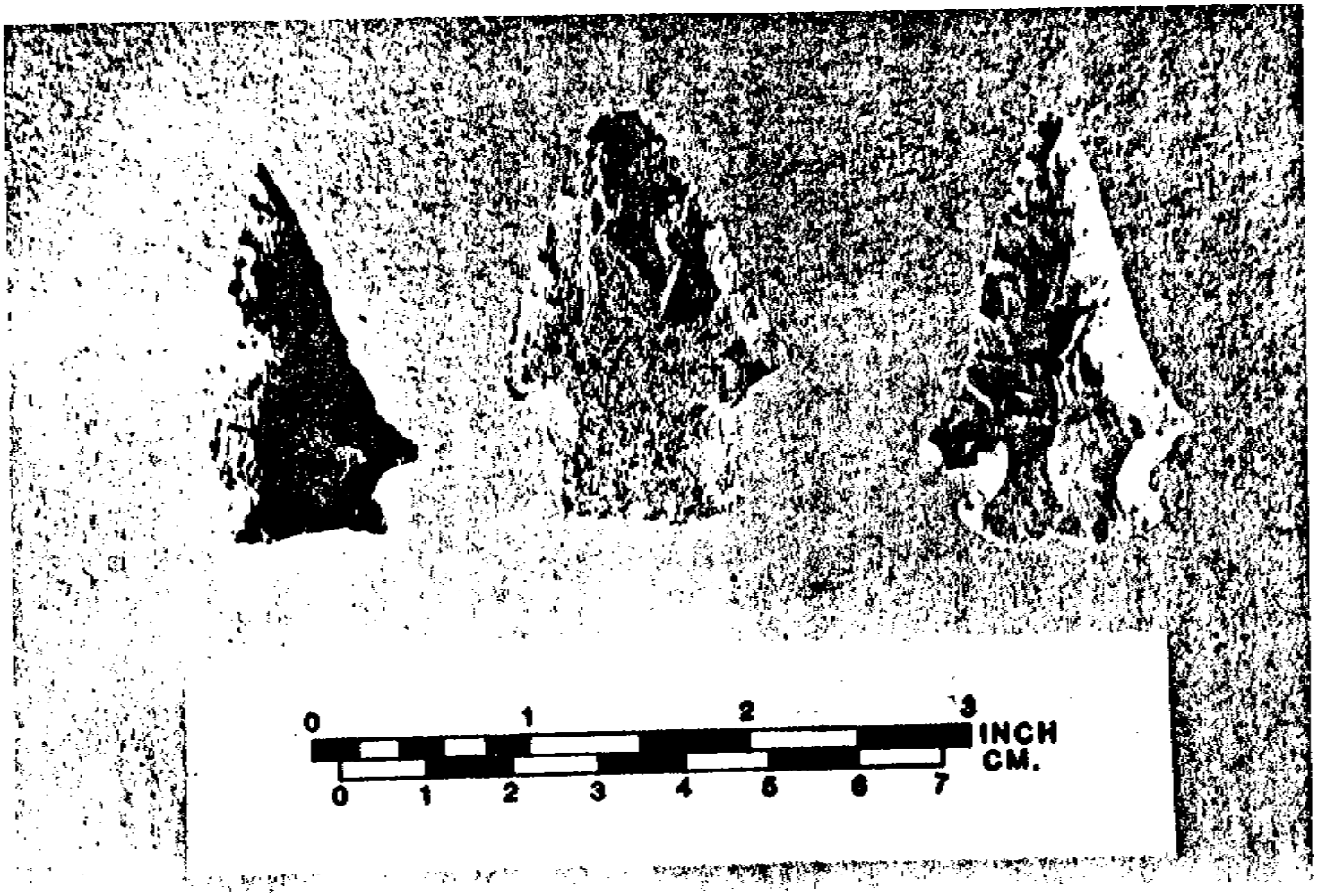
Located southwest of the H-39 site, the H-40 site lies on a rise on the north side of a bay/basin. One contracting stem biface and 15 flakes were found over an area about 15x30 meters. To the west of these sites, the H-47 site lies on a heavily eroded knoll on the south side of Barlow Branch. It measures about 110x200 meters and contained a thin scatter of artifacts including 1 Bare Island/Lackawaxen-like stemmed biface, 1 utilized flake, 1 core, and 10 flakes.

The H-51 site is a continuous scatter located on 3 small parallel ridges which lie on the south side of and perpendicular to Barlow Branch. One stemmed quartz biface (see Plate 1) , 2 non-diagnostic biface fragments, 1 utilized flake, 1 core, and 15 flakes were found (once again note low flake to tool proportion). Site H-54 is located on a south sloping rise on the north side of Barlow Branch. One quartz stemmed point, 1 biface reject, and 3 flakes were thinly scattered over an area about 60x60 meters.

The H-60 site contained the other bifurcate found in the subarea, a small quartz example (LeCroy-like) (see Plate 5), as well as 2 jasper biface fragments, 4 flakes, and fire-cracked rock. The site is located on an eroded knoll on the north side of Barlow Branch. The H-67 site, located on a badly eroded knoll at the confluence of an ephemeral stream and Barlow Branch,

PLATE 9

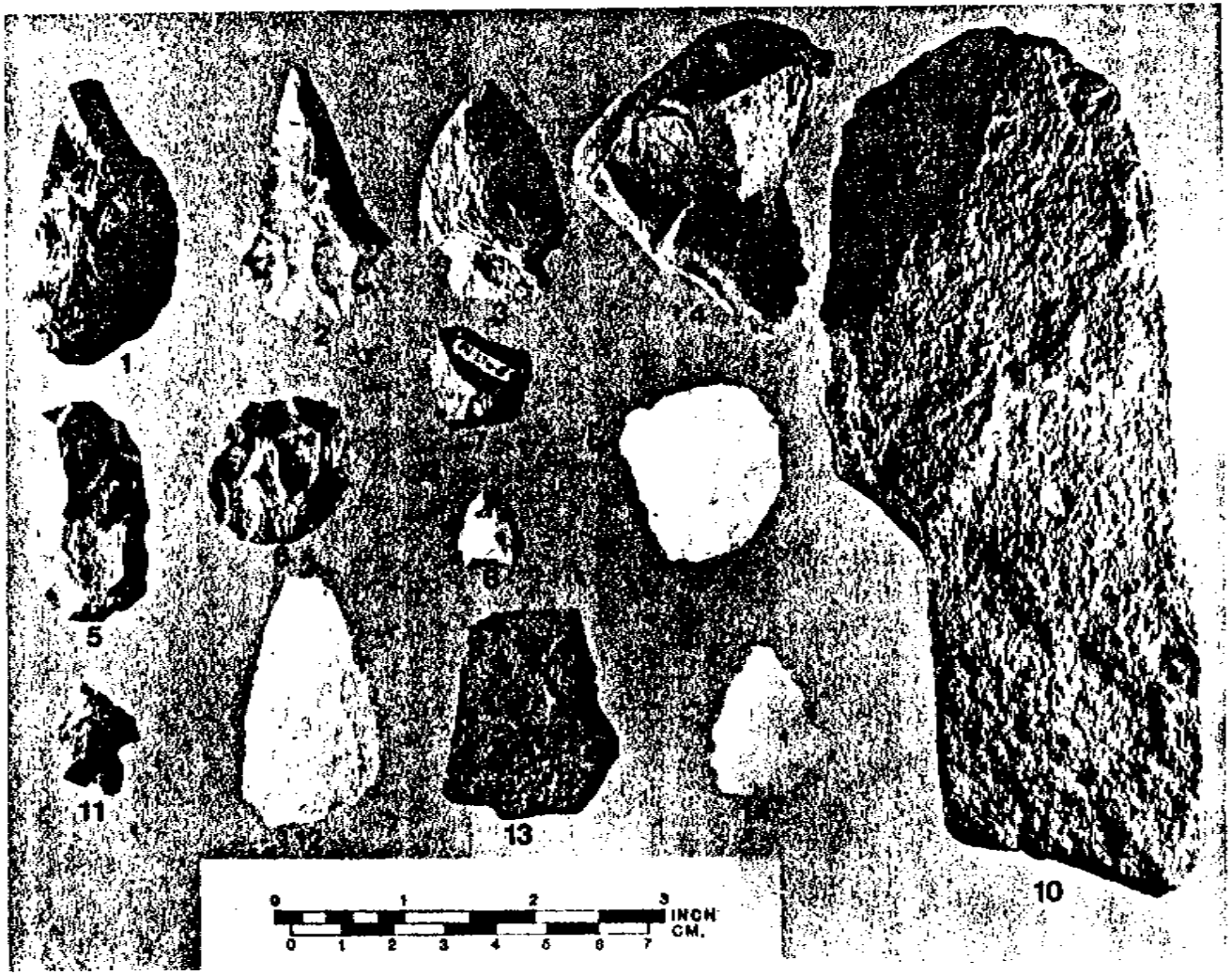
Selected Kirk Points from Sites in the Route 13 North Survey



LEFT TO RIGHT: 7NC-H-73, 7NC-J-105, 7NC-H-39

PLATE 10

Selected Artifacts from 7NC-H-39



1-biface reject
2-Kirk point
3-notched point
4-core
5-biface reject
6-flake tool
7-flake tool
8-point tip
9-early stage biface reject
10-chopper or ax
11-bifurcated base point
12-biface
13-broadpoint
14-biface fragment

produced a hammerstone (see Plate 4), 2 non-diagnostic biface fragments, 7 flakes, and fire-cracked rock. Field visibility was about 40%.

As in previous subareas, this one contained many small sites possessing a few flakes and/or 1 or 2 non-diagnostic bifaces, scrapers, or flake tools, and fire-cracked rock. Various natural settings were exploited, including the headlands along the permanent streams, ephemeral drainages, springheads, and bay/basin features. Sites in this category are 7NC-H-35 through 38, 41-46, 48-50, 52, 53, 55-59, 61-66, 68, and 69.

In addition, 2 previously unrecorded historic sites were located near the Conrail tracks and just south of Ratledge Rd. (Rd. 460). Both contained brick and 19th century ceramics (redware, yelloware, whiteware) and there were no standing structural remains present or indications of subsurface features. Site H-88 is located just east of the Conrail tracks about halfway between Ratledge Rd. and Barlow Branch, while H-89 is situated on a 2 meter high rise about 100 meters east of the Conrail tracks (on the south side of Ratledge Rd.).

Subarea 8. This subarea is located southwest of Blackbird, Delaware and is mostly woodlot. The eastern one-third is cultivated but access was denied by the owner. Two parcels of land were examined: a section of the John Wilson farm due south of the intersection of Rds 459 and 463 (Blackbird Station Rd.), which produced 3 prehistoric and 1 historic sites, and the William K. Kraus property (Yuletide Farm) on the north side of Rd. 472 (Oliver Guessford Rd.), which produced 4 prehistoric sites and one with both prehistoric and historic remains.

The small section of the Wilson property which falls within the project area contains several bay/basin features separated by 1.5 to 2.0 meter high ridges. Site H-72 is a thin scatter of 1 jasper scraper and 6 flakes surrounding a bay/basin feature. Just east of that was found a Kirk corner-notched point on a 2.5 meter rise in the center of 4 bay/basin features (7NC-H-73; Plate 9). The H-74 site contained a few flakes and one rejected quartz tool, while the H-75 site was a scatter of brick chunks, whiteware, and redware covering an area measuring about 20x40 meters. Curiously, the latter site is located near no known historic road and is 200 to 250 meters south of present Blackbird Station Rd.

Site 7NC-H-76, located on the Kraus farm on Rd. 472, is a sprawling site on the south side of a unnamed tributary to Blackbird Creek. An ephemeral stream bisects the site and 2 bay/basin features lie on its southern extremity. The soil is a very well-drained sandy loam. The prehistoric material included one stemmed quartz biface, one contracting stem biface, 7 non-diagnostic rejected and fragmentary bifacial tools, 1 core, 1 flake tool, 49 flakes and 15-20 pieces of fire-cracked rock. The historic material included a white salt-glazed stoneware teacup basal sherd (1725-1775 dates of manufacture), 1 gilt metal

button, 1 glass slag fragment, 1 large lump of ferrous metal, 1 brass sleigh bell fragment, and much 19th and 20th century redware, whiteware, and bottle glass fragments. The prehistoric material was heaviest on the rise about 50 meters west of the standing farmhouse, while the historic material had two foci of concentration. The 19th and 20th century ceramics and glass were concentrated on the knoll northwest of the house, while the brass bell fragment, the stoneware teacup sherd, and other materials were found southwest of the house.

Site H-77 is located on a sandy rise about 100 meters west of Blackbird Creek. Although surface visibility was less than 2% at the time of the survey, 1 biface fragment, 1 utilized flake, 1 core, 16 flakes, and fire-cracked rock were found in a 15x45 meter area. The low visibility coupled with the substantial artifact count suggests the possibility of an intensely utilized site. Site H-78 is located on another sandy rise on the west side of Blackbird Creek. It is further enhanced by a bay/basin feature a few meters to the south. Found were 1 small contracting stem biface (see Plate 1), 1 teardrop-shaped biface, 1 biface reject, and 13 flakes.

Sites H-79 and 80 were found on a rise in a cluster of bay/basins. The former produced a Bare Island-like stemmed biface and the latter just three flakes. Two other sites were found in this subarea, although these were surface finds made during the subsurface testing phase, to be discussed below. They were found on the Charles Owensby property south of Blackbird Station Rd.

Site 7NC-H-81 was on a motorcycle trail in a woodlot and was adjacent to a subsurface test unit designated H-86. One jasper stemmed biface, 2 flakes, redware, whiteware, porcelain, a machine cut square nail, and numerous brick fragments were found on the surface. The site is disturbed by the historic activity and it is unknown if intact subsurface prehistoric remains exist. It is located on a rise with an active stream flowing 50 meters to the south. A large cobble core was found on a very sandy grass-covered rise located between a perennial stream and 2 bay/basins. The core was found in a 0.6 x 0.6 meter bare patch on the crest of the rise, which had an overall visibility of zero. It was designated site 7NC-H-82.

Subarea 9. This large subarea consisted of land east of the confluence of Sandom Branch and Blackbird Creek and downstream along the main trunk of the Blackbird. Due to agricultural practices, no ground surface was visible in the northern half of the subarea, but the southern half contained visible ground and fifteen sites were located. The largest of these is 7NC-J-81, located on a rise at the confluence of Sandom Branch and the Blackbird Creek. It produced 1 corner-notched biface (see Plate 3) 2 biface fragments, 2 scrapers, 2 flake tools, and 37 flakes. The location and artifact types present suggest it may be a macro-band base camp.

Sites 7NC-J-69 through 80, 82, and 83 were small surface scatters located throughout the southern half of the subarea in various environmental settings. These sites produced flakes and isolated tools in small numbers, including several stemmed points and two Woodland II triangles (see Plate 2).

Subarea 10. All but a very small portion of this subarea is forested or no-till soybeans. In its southeast corner, a portion of the George W. Reed, Jr. farm produced two sites, J-84 and 85. The first is located on a small rise south of the head of an ephemeral stream and northeast of a bay/basin feature. Only two artifacts were found: a contracting stem biface and one flake.

The J-85 site is located on a 2-meter rise north/northwest of a bay/basin and produced one stemmed jasper biface reject, a scraper, a utilized flake, and one other flake in a very thin scatter.

Subarea 11. Like Subarea 10, this area is primarily forest and no-till soybeans and offered very little surveyable ground. Only 3 sites were recorded, all of them small surface scatters. Site J-86 contained only 2 artifacts found on a very gentle slope south of a bay/basin. However, one was a LeCroy bifurcated base point (see Plate 5) while the other was a utilized chalcedony flake. The J-87 site is located on the north side of the same bay/basin and produced one biface reject and 5 flakes.

Site 7NC-J-88 was found at the north end of the subarea and is located between Blackbird Creek on the northwest and a bay/basin cluster on the south. One utilized flake and 10 other flakes were found in a 30x100 meter area.

Subarea 12. This subarea is mostly forested and the largest cultivated section, southwest of Blackbird, could not be surveyed due to denial of access by the landowner. Thirteen sites were found in the accessible cultivated areas, eight of which were on the Mrs. J. K. Orrell, Sr. property on the west side of Rt. 13. Three of these contained substantial quantities of diagnostic artifacts and other tools. Site 7NC-J-95 is located on a rise between a bay/basin and an ephemeral stream to Sandom Branch and produced 1 contracting stem biface, 1 biface reject, 1 utilized flake, 18 flakes, and 3 pieces of fire-cracked rock. Field visibility was about 40%.

The J-97 site is situated on a long north-south oriented 4-meter high ridge between an ephemeral stream on the north and several bay/basins on the south. Found were 1 biface fragment, 1 core, 1 large chunk of worked siltstone or argillite, 12 flakes, and fire-cracked rock. Just east of this on a parallel ridge lies J-99, which produced 1 bifurcated base point (see Plate 5), 1 biface reject, 1 utilized flake, 1 core, 18 flakes, and fire-cracked rock.

Sites J-94, 96, 98, 100, and 101, also on the Orrell farm, were small surface scatters found on knoll tops at the heads of ephemeral streams and around bay/basin features. Three small sites, all adjacent to bay/basin features, were found in cultivated sections on the east side of Massey Church Rd. One corner-notched chert biface, 1 stemmed biface fragment, and one flake were found at J-91 (see Plate 3); 1 contracting stem biface and 3 flakes at J-90 (see Plate 1); and a core and 4 flakes at J-89. Two small flake scatters, J-92 and J-93, were found near bay/basins west of existing Rt. 13 across from the truck weigh station.

Subarea 13. This large subarea lies on the east side of Rt. 13 and contains the Sawmill Branch to Smyrna River. Most of it is wooded and at the time of the survey, much of it was also in cultivation and could not be surveyed. Three properties were examined and produced archaeological sites: the Shane and Knotts farms on the north side of Rd. 469 and the Mrs. W. B. Faggart property east of the intersection of Rds. 5 and 495.

Three large sites were found on the Shane property on 3 parallel ridges on the west side of an unnamed tributary to Sawmill Branch. An unnamed active stream passes along the south side and the landscape is dotted with numerous bay/basins and ephemeral streams. The southernmost of the three, J-102, contained 2 chert biface fragments, 2 scrapers, 1 flake tool, and 19 flakes. A bay/basin feature separated this from the next site north, the J-104 site, which contained 1 biface reject, 2 scrapers, 2 utilized flakes, and 19 flakes. The northernmost of the three, J-103, was also the largest, and was separated from 104 by an ephemeral stream. It yielded 1 corner-notched chert biface (see Plate 3), 1 contracting stem biface, 6 non-diagnostic broken or rejected bifacial tools, 3 scrapers, 8 utilized flakes, 1 core, 211 flakes, and 3 pieces of fire-cracked rock. The site measured approximately 60x300 meters.

Five sites were found on the Knotts farm directly east of Shane's. The J-105 site, approximately 150x450 meters in size, is a sprawling continuous scatter south of the confluence of 2 unnamed tributaries to Sawmill Branch. It includes 4 bay/basin features and 2 ephemeral streams and yielded 2 bifurcated base points (one of jasper with cortex and the other of quartz) (see Plate 5), 1 rhyolite Kirk stemmed biface (see Plate 9), 7 non-diagnostic biface rejects, 3 flake tools, 2 cores, 151 flakes, and fire-cracked rock. Southwest of J-105 lies the J-107 site, located on a 2 meter high rise about 220 meters east of an unnamed tributary to Sawmill Branch. Two contracting stem chert bifaces (see Plate 1), 1 other biface (broken, but probably stemmed), and 2 flakes were found. The other 3 sites on the Knotts farm, 7NC-J-106, 108, and 109, were small surface scatters of flakes and a quartz end/side scraper (J-108).

The farmhouse on this property, which was standing on the 1955 USGS quadrangle of this area (Clayton) is now demolished and a heap of rubble marks the location. It is structure #351 on the

historic structure survey completed for this project. There is no trace whatever of structure #353, which sat on the property near Rd. 469.

The 7NC-J-110 site on the Faggart property is situated on a 2 meter high well-drained rise surrounded by bay/basin features on the north, south, and east. It is located in a small soybean field about 125x160 meters and extends to the limits of the cultivated area. Numerous flakes were also found in bare patches in the lawn to the rear of Mrs. Faggart's house. The entire distribution suggests that the size is artificially constrained by modern land use and may be much larger. Recovered were 2 stemmed bifaces (see Plate 1), 1 biface fragment (possibly a reworked triangle point), 4 other non-diagnostic biface rejects or fragments, 1 scraper, 3 flake tools, 1 core, 57 flakes, and several pieces of fire-cracked rock. Also found on the rise was a fragment of a ground stone artifact, most likely a "boatstone" (see Plate 4). A 1909 Indian head cent was also found, although there is no documented evidence of any structure ever standing at this intersection. Mrs. Faggart's house post-dates 1969.

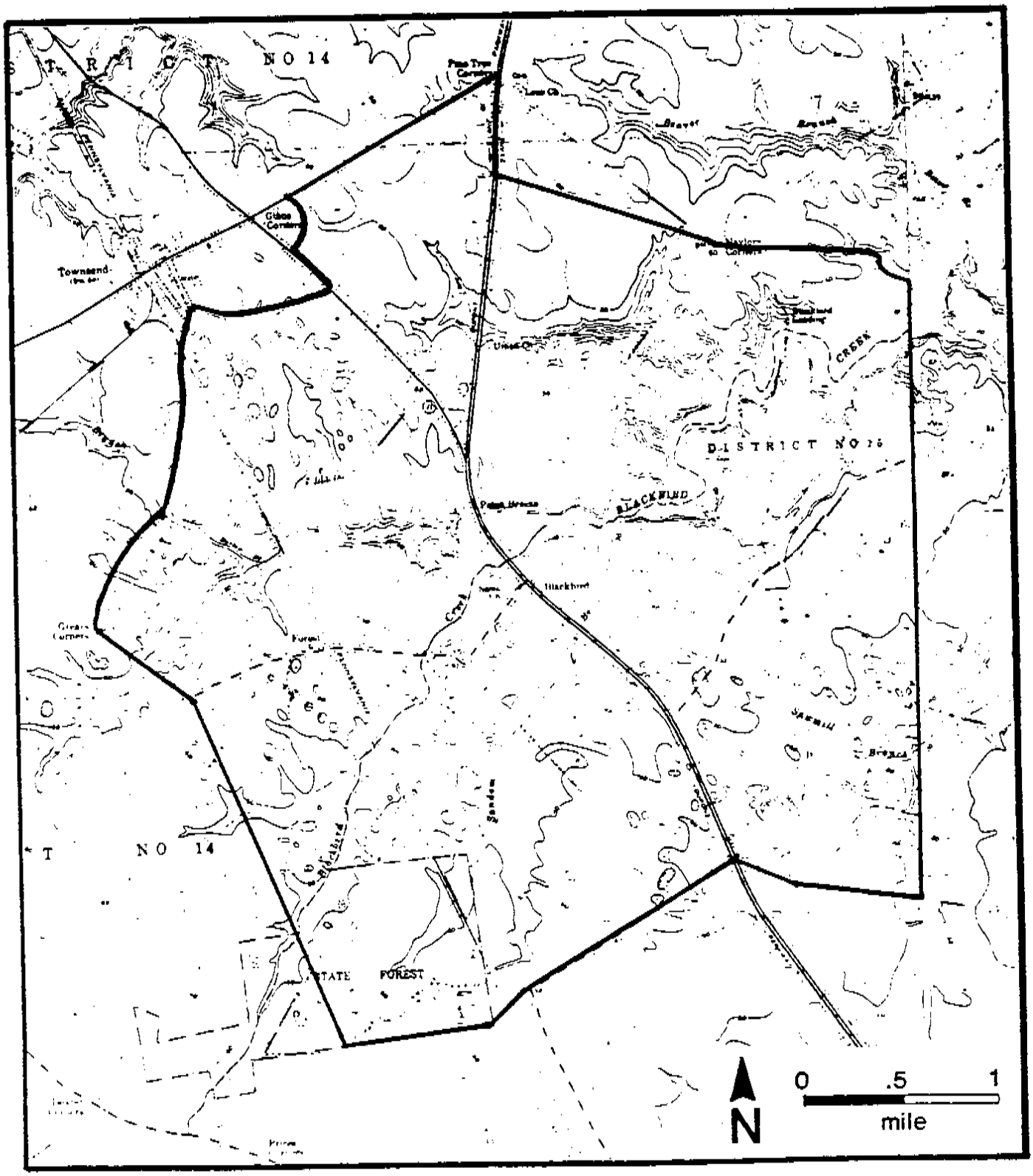
Subarea 14. Almost all of this subarea is no-till agriculture, woodlot, and residential and only 2 sites were recorded. Both were incidental finds made as a result of the later subsurface testing program. Site J-111 was found at the edge of a soybean field overlooking a deeply cut unnamed tributary to Blackbird Creek. One contracting stemmed biface and 2 quartz flakes were the only finds. The J-112 site, which produced two flakes and fire-cracked rock, lay on the opposite side of the ravine from J-111. It was exposed by a bulldozed borrow scrape and its integrity is suspect.

Subarea 15. Almost all of this subarea is woodlot, no-till corn, or residential structures. The only accessible plowed land was the farm on the north side of Rd. 465 (Eagles Nest Landing Rd.) owned by Jack Ellingsworth of Clayton.

Four sites were located within this subarea, three of which (7NC-J-114, 115, and 116) were small flake scatters along perennial or ephemeral streams. Site J-117 is located on a severely eroded steep slope and an adjacent upland flat area on the west side of Sawmill Branch. Recovered were 1 drilled atlatl weight fragment (see Plate 4), 1 chert bifurcated base point (similar to Broyles (1971) St. Albans type) (see Plate 5), 3 non-diagnostic biface fragments, 3 flake tools, 1 "potlid" jasper fragment with apparently worked edges, 1 hammerstone, 24 flakes and fire-cracked rock.

Blackbird Area - Subsurface Testing. Extensive subsurface testing was also undertaken for a sample of the Blackbird area (Figure 17). The sites found during the subsurface testing phase are noted on Figure 16 and are listed in Tables 6 and 7. Forty-three 1x1 meter units were excavated as part of this phase of the subsurface testing. Appendix IV shows representative profiles and Appendix V summarizes locational and artifact data.

FIGURE 17
Sub-surface Test Locations - Blackbird Study Area



Three types of woodlots were investigated in Subarea 1: type I - no associated surface water; type II - single bay/basin association; and type III - complex bay/basin association. The first named was located adjacent to the DiGiovanni farm west of present Rt. 13. Ground investigation demonstrated that the tract actually contained two active streams and four bay/basin features not represented on the maps. Five test units were placed in the woodlot at selected locations, mainly small rises adjacent to the water sources. Stratigraphic profiles varied from yellow-brown sandy loam to gray clayey loam and several of them had never been plowed historically. However, only one artifact, a quartz flake, was found in all five units. This was located in an excavation on the north side of a bay/basin and was designated 7NC-H-11.

The type II study area (simple bay/basin association) in the northeast corner of the subarea was found to contain 3 bay/basin features and a single test unit was placed on a 1.5 meter rise in the center of the cluster. The soil was a well-drained fine yellow sand. No cultural material was recovered.

The third test area investigated was east of Rt. 896 and southeast of Ginns Corner and contained 13 bay/basins ranging in size from 30 to 200 meters (long axis). Seven test units were placed at selected locations and two produced artifacts. Both were on rises adjacent to bay/basins and each produced a single artifact: a biface. The first was a jasper rounded stem biface (7NC-H-12) and the second was an argillite distal fragment (7NC-H-13). No other artifacts were recorded from this test area.

A type I and a type V setting were investigated in subarea 2, with three units placed in the former and six in the latter. The type I was located on the east side of Rt. 13 and was found to be actually a type III (complex bay/basin association). Only one unit produced cultural material: site 7NC-J-27 on the south side of a pair of bay/basins. The unit was placed on a 1.5 meter high knoll and debitage was found to a depth of 80 centimeters below the surface. The soil was a fine yellow-brown silt similar to wind-blown deposits (Appendix IV).

The type V test area was located on the west side of a south flowing unnamed tributary to Herring Run. Several ephemeral streams course through the test area and served to transform it into a type VII (minor/minor stream confluence). Six units were excavated in the woodlot along the length of the stream and at the mid-stream confluence and only one failed to produce cultural material. That unit was placed in an apparently disturbed location. Of the five productive units (designated as sites 7NC-J-22 through 26), four contained small amounts of prehistoric lithic debitage and the fifth produced quantities of brick, 19th century ceramics and bottle glass, and coal. All except the disturbed unit were characterized by plowzones over tan-yellow silty loam, which was in turn underlain by mottled orange and gray sterile clay.

One woodlot was tested in subarea 3, a type VI on the northwest side of Blackbird Landing. Four test units were placed on high spots adjacent to the confluence and all four produced cultural material. The initial unit (7NC-J-38) was placed in the northern part of the test area on a headland between a deeply cut ravine and an overgrown dirt road of undetermined age. Several pieces of embossed clear bottle glass, all from the same vessel, were found.

The second unit (7NC-J-39) was placed on the headland about 20 meters back from Blackbird Creek and produced prehistoric lithic debitage and large amounts of brick, 19th century ceramics, and oxidized nail fragments. All of the material was found in the plowzone and the yellow-brown clayey subsoil was sterile. Thus it appears that a prehistoric site has been disturbed by plowing and other historic activity. The quantities of historic domestic and architectural artifacts suggest that a dwelling may have stood near the spot.

The other two units were placed on the bluffs along an ephemeral stream draining southeasterly to the Blackbird and both were in undisturbed contexts (no plowzone). Site 7NC-J-40 contained five flakes and a chert scraper (Appendix IV) while 7NC-J-41 produced flakes, fire-cracked rock, and small amounts of whiteware and coal.

Two initial test units were placed in a type IX setting, a bay/basin - stream association in Subarea 4. This setting contained a cluster of 5 bay/basins on the east side of an unnamed tributary to Barlow Branch and a unit placed on a rise in the center of the 5 features produced several flakes and fire-cracked rock in an historically unplowed context. This was designated 7NC-H-20 (Appendix IV; Plates 11 and 12). The second unit was placed on a one meter rise just east of the tributary and also had never been plowed. It produced flakes and one sherd of Wolfe Neck ceramics and was designated 7NC-H-21 (see Plate 6).

Two different settings were explored in Subarea 6. One was a small type V north of Barlow Branch and the other a type VII at the confluence of Barlow Branch and an unnamed tributary. Most of the first setting had been destroyed by borrow operations but a test unit placed in a remnant section produced one chert early stage biface reject, 3 quartz flakes, whiteware and glass (site 7NC-H-34). All of this material was found in the plowzone, which overlaid an orange clayey subsoil.

The type VII setting produced flakes and fire-cracked rock in all three excavated test units. Although small amounts of glass and coal were recovered from these units as well, the stratigraphic profiles did not indicate the woodlot had ever been plowed (Appendix IV). Together these three units were designated 7NC-H-33.

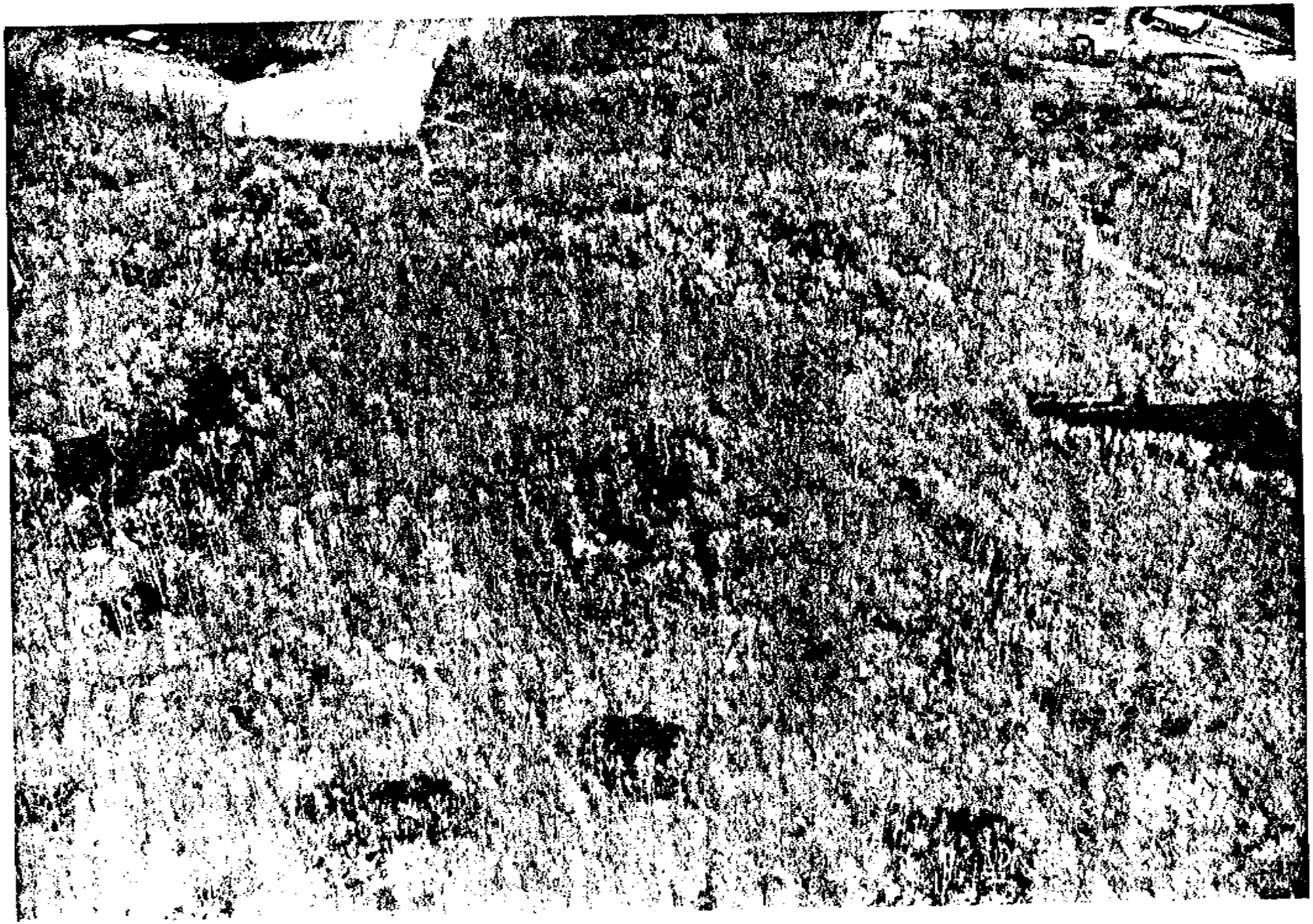
Two units were placed in another type VII setting along Barlow Branch in Subarea 7. One produced quartz flakes in a

PLATE 11

Bay/Basin Feature Near Site 7NC-H-20, Blackbird Study Area

PLATE 12

Aerial View of Site 7NC-H-20, Blackbird Study Area



heavily disturbed context (7NC-H-70) while the other produced flakes in the plow zone only (7NC-H-71).

One large type VIII location was investigated in Subarea 8 and seven units were excavated. The setting was found to contain several bay/basin features and ephemeral streams and more closely resembled a type IX. All seven units were placed on high ground adjacent to stream courses or bay/basin features and five produced cultural material. The first four were placed in the western section and produced low numbers of flakes from the subsoil, which was a yellow-brown sandy loam. Of the three units placed in the eastern section, only one, on a piece of high ground above a tributary to Blackbird Creek, produced cultural material. Thirty-three flakes and a piece of fire-cracked rock were recovered to depths of 54 centimeters into a yellow-brown sandy loam subsoil (Appendix IV). This site, which had never been plowed, was designated 7NC-H-87, while the other four were labeled H-83 through H-86.

The H-86 unit lay in the vicinity of surface site H-81, discussed above in the section on pedestrian survey. All of the artifacts recovered from H-86, which included several pounds of brick fragments, 19th century ceramics and bottle glass, pipestem fragments, and lamp chimney glass, as well as lithic debitage, were found in the 37 centimeter deep upper organic level. The owner informed us that a shallow brick foundation, only a few meters from our test unit, had been mostly destroyed when a trail was bulldozed through the woodlot several years ago. However, some historic artifacts were saved at that time and were shown to us by the owner. This collection included sherds of manganese- and lead-glazed redware, whiteware, ironstone, underglaze blue hand-painted porcelain (probably early 19th century), gray salt-glazed stoneware, underglaze polychrome hand-painted pearlware (1795-1835), cut nail fragments, and several other oxidized nail fragments. To sum up the data from the vicinity of H-86 and H-81, it appears that an early- to mid-19th century structure of unknown size, possibly related to domestic activities, stood on a Woodland I prehistoric site of unknown function. Historic documentation revealed no clue to the origin of this structure.

The final setting to be examined as part of the subsurface testing scheme was a type V (minor stream) in Subarea 14. One unit was placed on each side of the deeply dissected stream. The first, on the east side, was completely sterile, but the second was productive. Set in an historically unplowed woodlot, it yielded 36 flakes and fire-cracked rock to a depth of 40 centimeters below the surface and was designated 7NC-J-113 (see Appendix IV for profile). This unit was located about 50 meters from 7NC-J-111 (contracting stem quartz biface) and the two sites may be related.

No excavation was conducted in Subareas 5, 9, 10, 11, 12, 13, and 15 as part of this phase of subsurface testing because they were not included in the random sample of wooded areas

selected for subsurface testing.

INTENSIVE TEST EXCAVATION RESULTS

Intensive test excavations were undertaken at two bay/basin features as a part of the field research (Figure 18). These excavations included intensive testing of an unplowed wooded area adjacent to a bay/basin complex containing standing water and excavations in the center of a dry bay/basin feature. The goal of the excavations in the unplowed site was to determine the extent of sites associated with bay/basin features and to see if such sites would be eligible for listing on the National Register of Historic Places. The goal of testing the dry bay/basin feature was to determine the extent of preserved plant remains and pollen which could shed light on paleoenvironmental conditions in southern New Castle County. The results of this testing program are described below.

Thirteen 1x1 meter test units were excavated at site 7NC-H-20, which is located on a sandy knoll in the center of a cluster of bay/basin features containing standing water. Figure 19 shows the site map and grid plot and Figure 20 shows a composite profile of the main site area. None of the units contained plowzones, indicating that, although the woodlot had been logged, it had never been plowed. In general, the soils at the site were very fine grained silts and silty sands which may have been of wind blown origin. Artifacts were buried by up to 55 centimeters of these soils.

Figure 21 shows a contour map of the artifact density at the site. Table 8 provides a summary catalogue of the artifacts recovered. All but two of the excavation units produced prehistoric lithic materials, with the crest of the rise showing the greatest concentration of artifacts. One unit (N0W5) produced one quartzite early stage biface reject, 1 biface distal end fragment, and 156 flakes (primarily quartzite), an assemblage suggesting a chipping feature. Unit S4W6 yielded 104 flakes and a contracting stem biface. The range of artifacts recovered suggests the presence of a small base camp or procurement/staging site similar to the Hawthorn Site (Custer and Bachman 1983).

Four additional excavation units were placed on high ground surrounding a bay/basin directly east of the above mentioned units and were intended to clarify the site limits. Three of the four units were sterile, but unit 2-4-4, on the northeast side of the bay/basin, produced 16 flakes and one utilized jasper flake down to a depth of 52 centimeters below the surface. The soils encountered in these units generally consisted of yellow-brown and orange-brown sandy loams and clayey sands with occasional pockets of gravel.

In addition to the test excavation units a small trench was dug across the rim of the bay/basin feature to gather soil and pollen samples and to record the soil stratigraphy of the bay/basin edge area. It was hoped that these data would help to

FIGURE 18

Location of Intensive Excavations

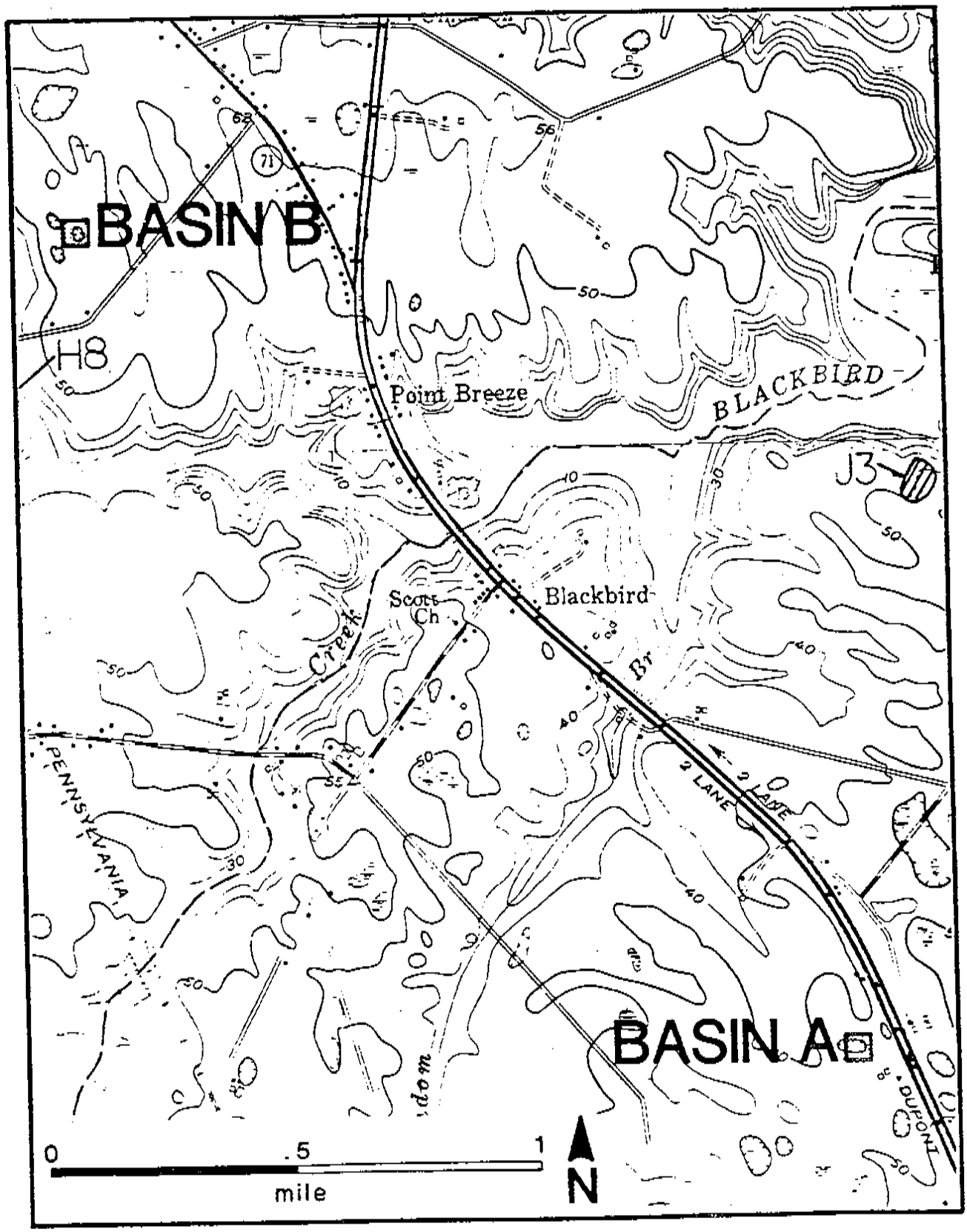


FIGURE 19

Site Map - 7NC-H-20

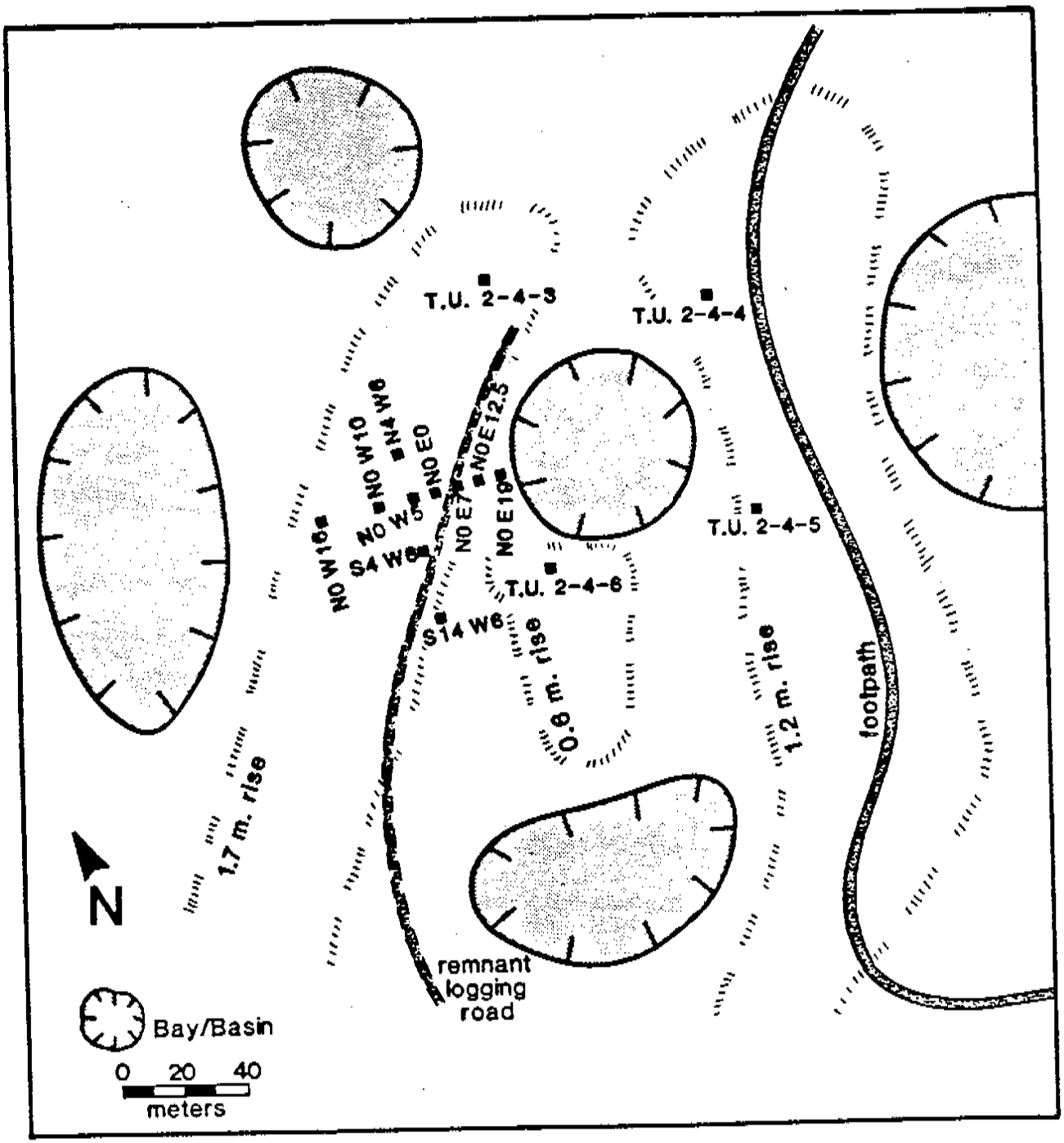


FIGURE 20

Composite Profile - 7NC-H-20

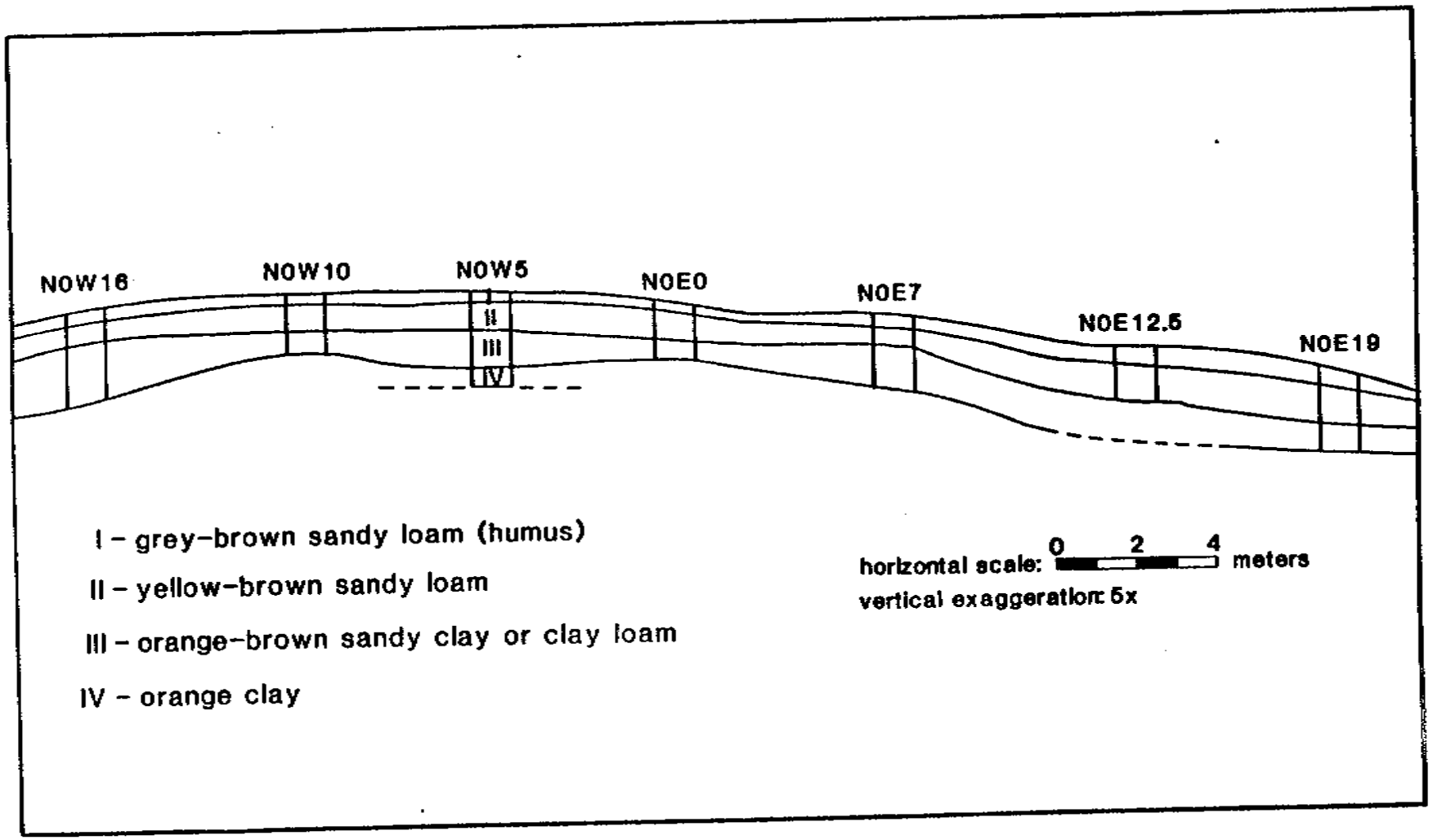


FIGURE 21

Artifact Density Map - 7NC -H-20

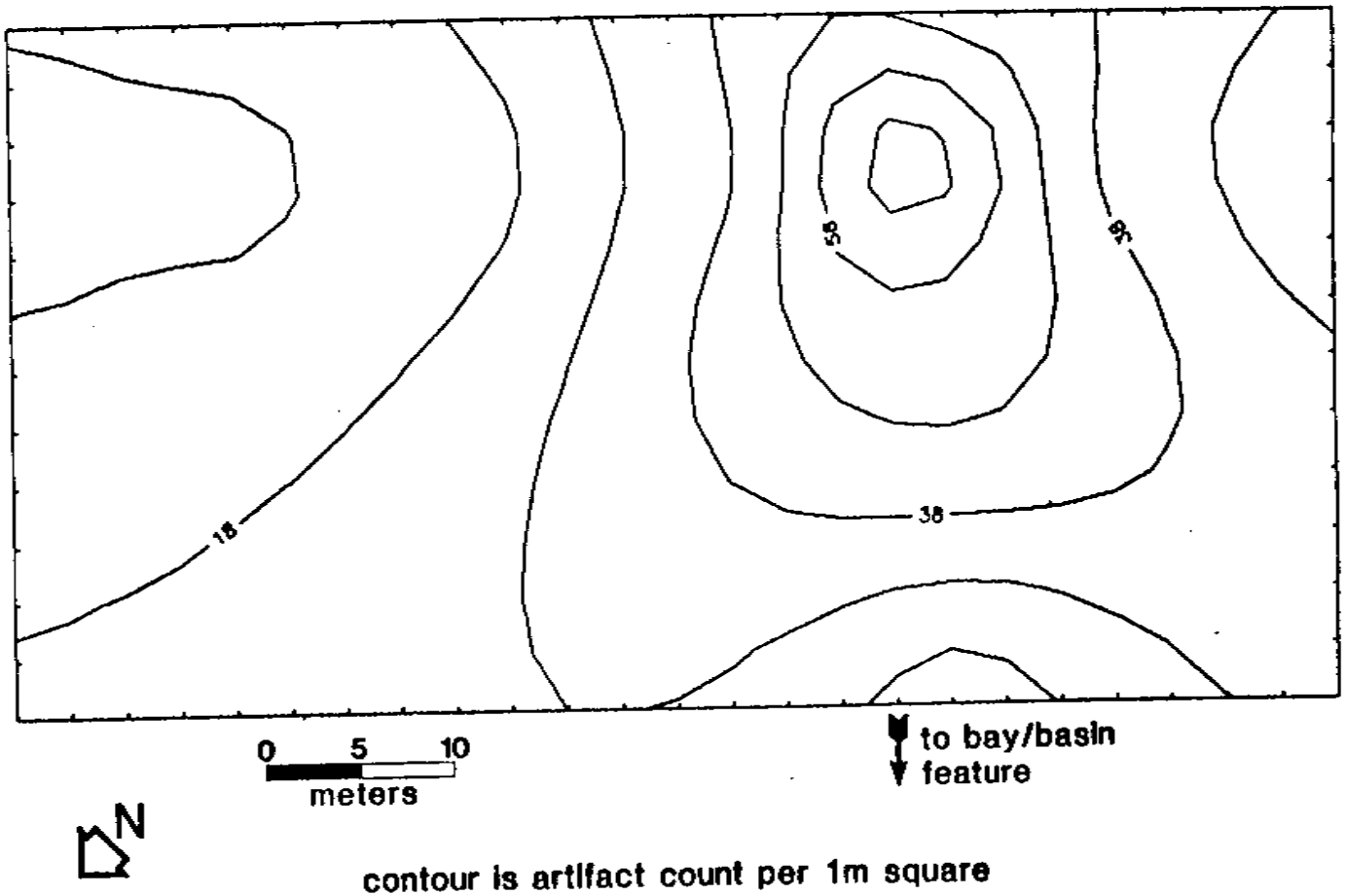


TABLE 8:

SUMMARY CATALOGUE - 7NC-H-20

Chipped Stone Artifacts

site: 7NC-H-20 location: All Units level: All

	quartzite	quartz	chert	jasper	rhyolite	argillite	ferroue quartzite	chalcedony	other	TOTAL
flakes (cortex)	53(13)	190(26)	54(13)	16(6)	2		1	5(1)		321(59)
flake tool										
pebble tool										
ESBR		1								1
LSBR										
LSBD										
LA/WL I points				1						1
WL II points										
other points			1							1
FCR		5(4)								5(4)
TOTAL	53(13)	196(30)	55(13)	17(6)	2		1	5(1)		329(63)

determine the origins of bay/basin features and to help understand their depositional history as it related to human exploitation of these features. Figure 22 shows the profile of the test trench and reveals that the size and water level of the bay/basin feature had changed dramatically through time.

In order to better understand the relationship of changing bay/basin size and water level, palynologists from Brown University cored the bay/basin to analyze the sediments for pollen and potential radiocarbon dates. Analysis of these data is not yet complete, but the preliminary results are included in Appendix VI. The core from the bay/basin was 4 meters deep and contained abundant pollen in most sections. Some sedimentary breaks were present including a sand lens at a depth of approximately 3.5 meters and a series of rhythmites below the sand lense. For the most part, the core does not suggest any dramatic changes in deposition within the bay/basin, except for the sand lense and the rhythmites. Preliminary analysis of the pollen shows some high concentrations of spruce pollen (Picea) from 60 cm on down through the core. A depositional hiatus may also be present down to 90 cm and may represent a Pleistocene/early Holocene boundary. Radiocarbon samples from the vicinity of the hiatus have been submitted and should reveal the chronology of the core's stratigraphy. A more complete report on the pollen and core stratigraphy will be submitted when the analysis is finished.

In sum, the results of the intensive testing of 7NC-H-20 indicate that significant archaeological sites are associated with the bay/basin features. This is especially true of unplowed settings, of which there are many in the Blackbird project area. The excellent preservation of pollen and other organic remains in the bay/basin features and the complicated history of their development present a situation where a detailed study of the interaction of human societies and their surrounding environment is possible at these sites. Consequently, these sites are clearly eligible for listing on the National Register of Historic Places and archaeological data recovery projects will be required for any of these sites which are impacted by the Route 13 project. A further discussion of the possible data recovery programs is presented in the management section of this report.

A second bay/basin feature (Basin A) (Plate 13), which is associated with sites 7NC-J-94, 95, 96 was also selected for intensive study. Excavations were undertaken at this site primarily to collect a series of pollen and macro-fossil samples and column soil samples from a deep intact profile within the bay/basin feature. Situated in a soybean field, the feature had been historically plowed but contained no crops or standing water at the time of the survey. Figure 23 shows a contour map of the site and Figures 24-27 show contour surface views of the feature.

One 2x2 meter test unit and seven auger holes were placed in a transect extending across the bay/basin feature from rim to rim (Figure 28). From these excavations, a stratigraphic profile of

FIGURE 22

Test Trench Profile - 7NC-H-20

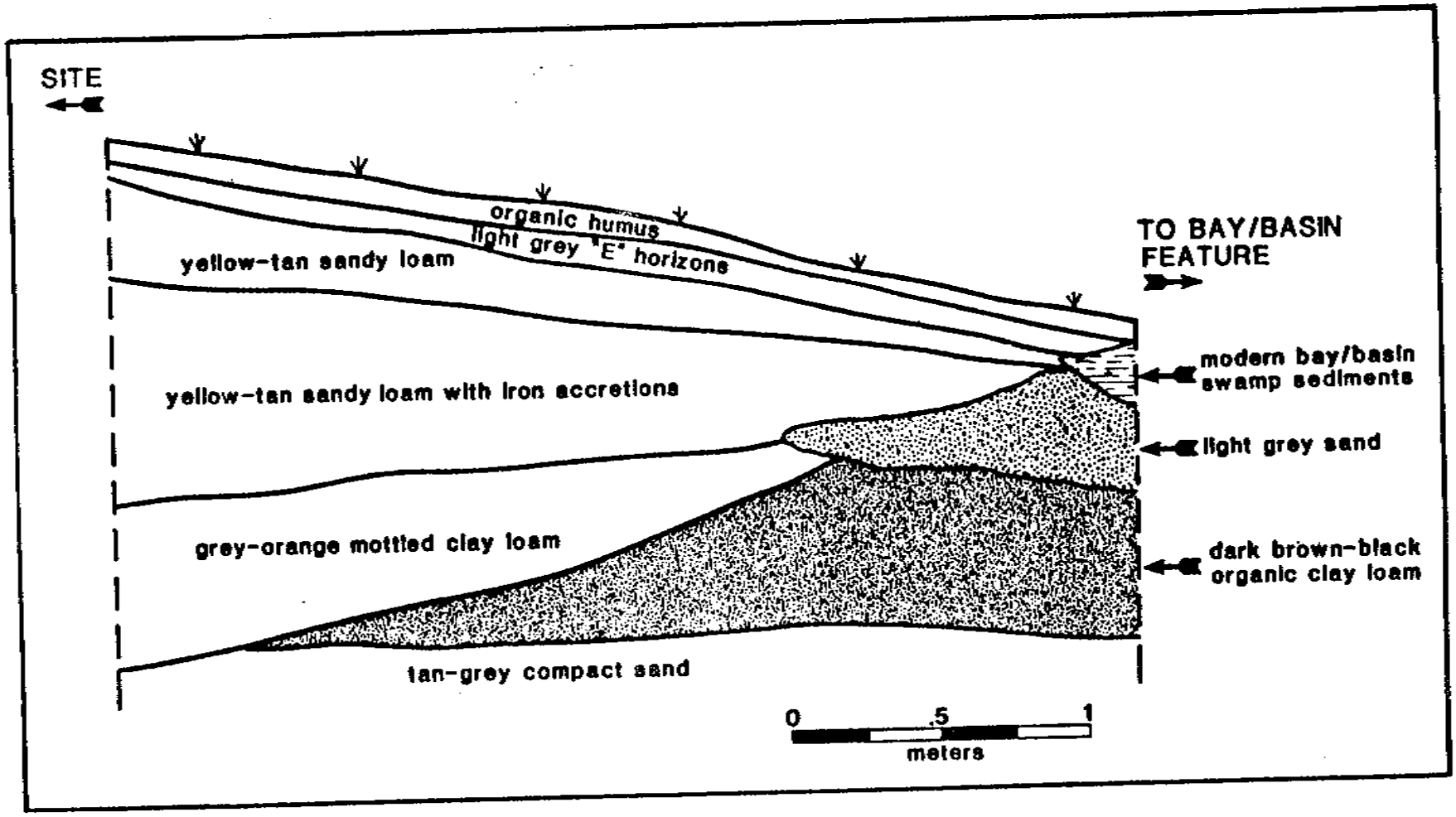


PLATE 13

Aerial View of "Basin A", Blackbird Study Area

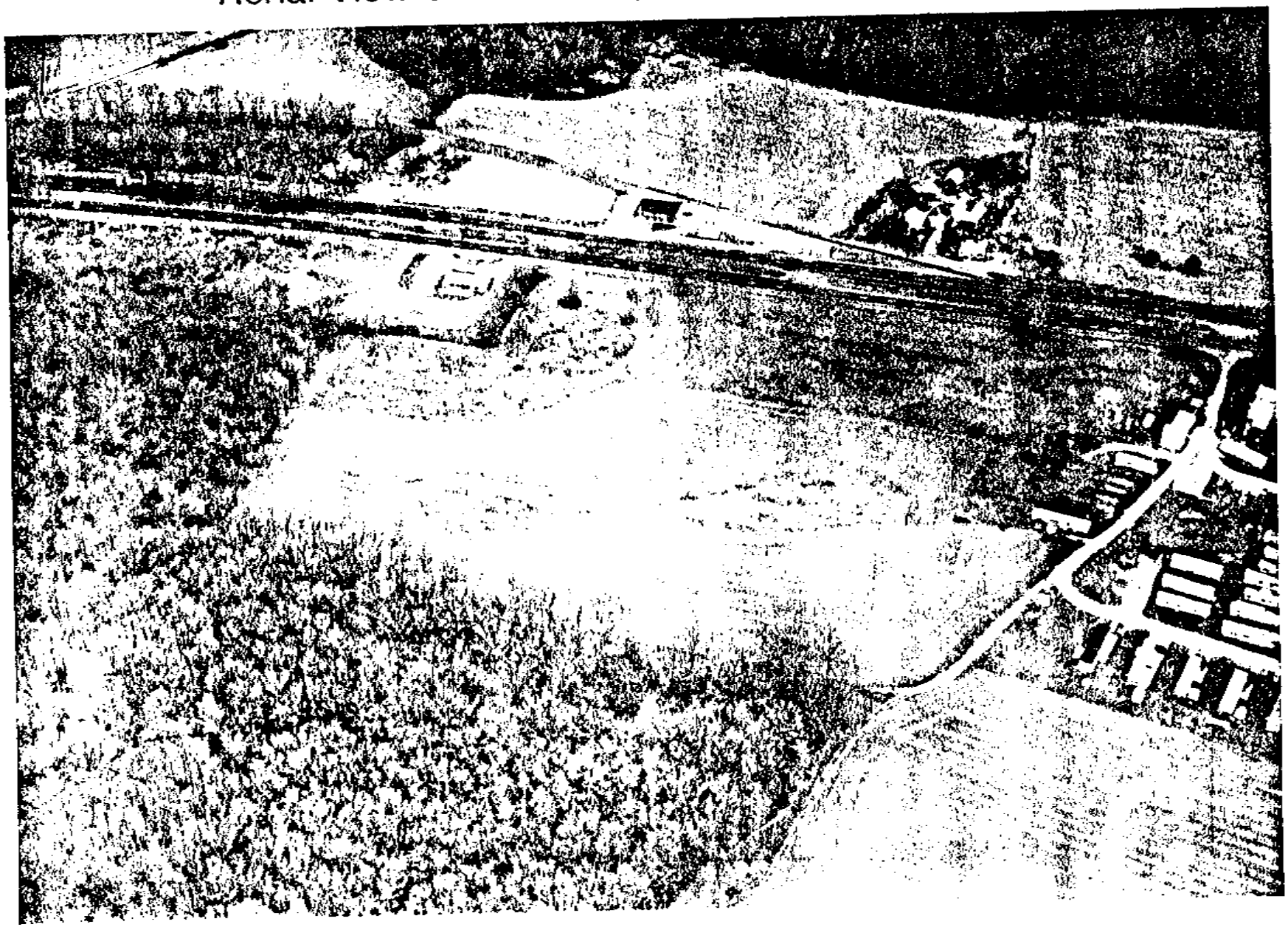


FIGURE 23

Topographic Map – Basin A

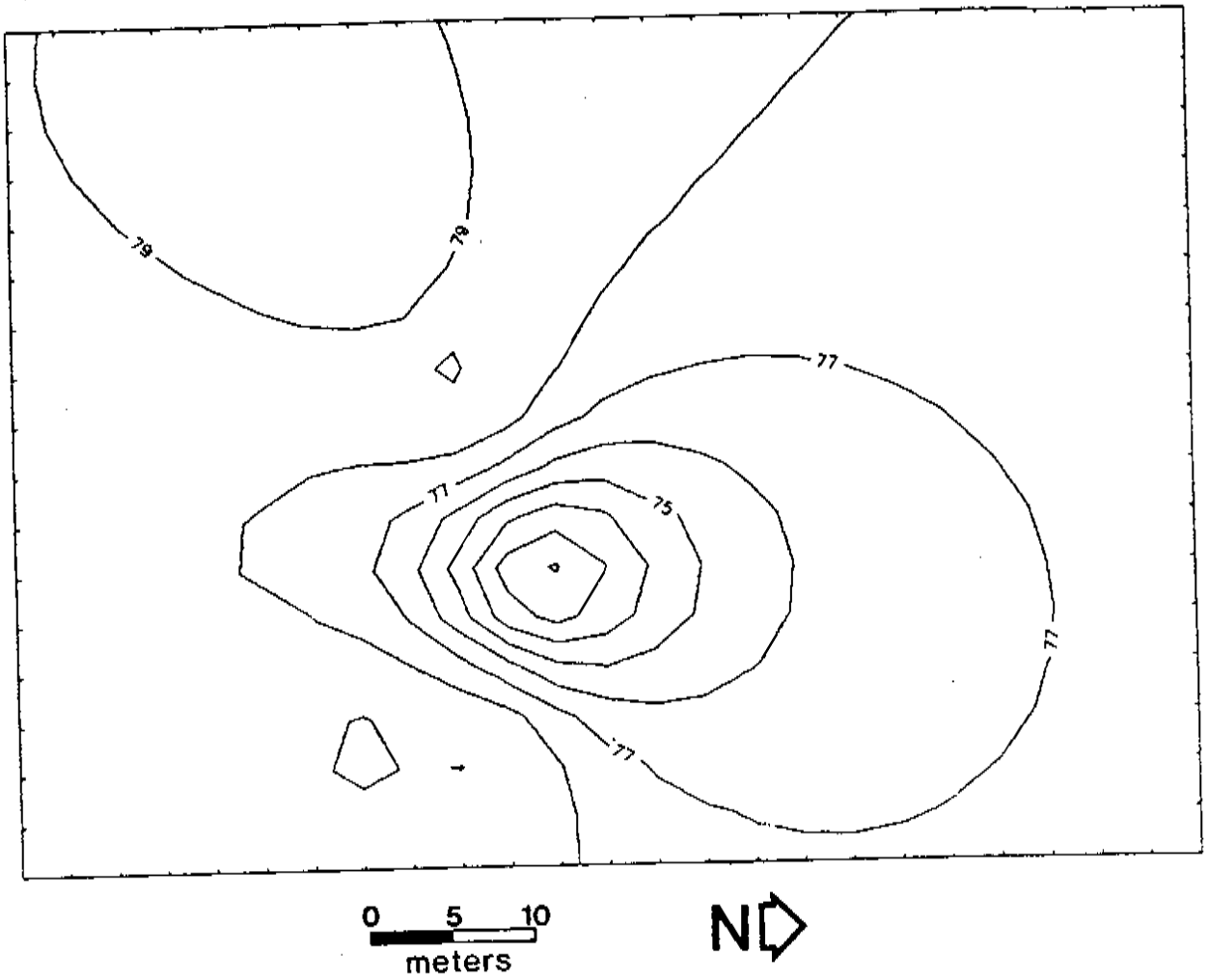


FIGURE 24

Surface View No. 1 – Basin A

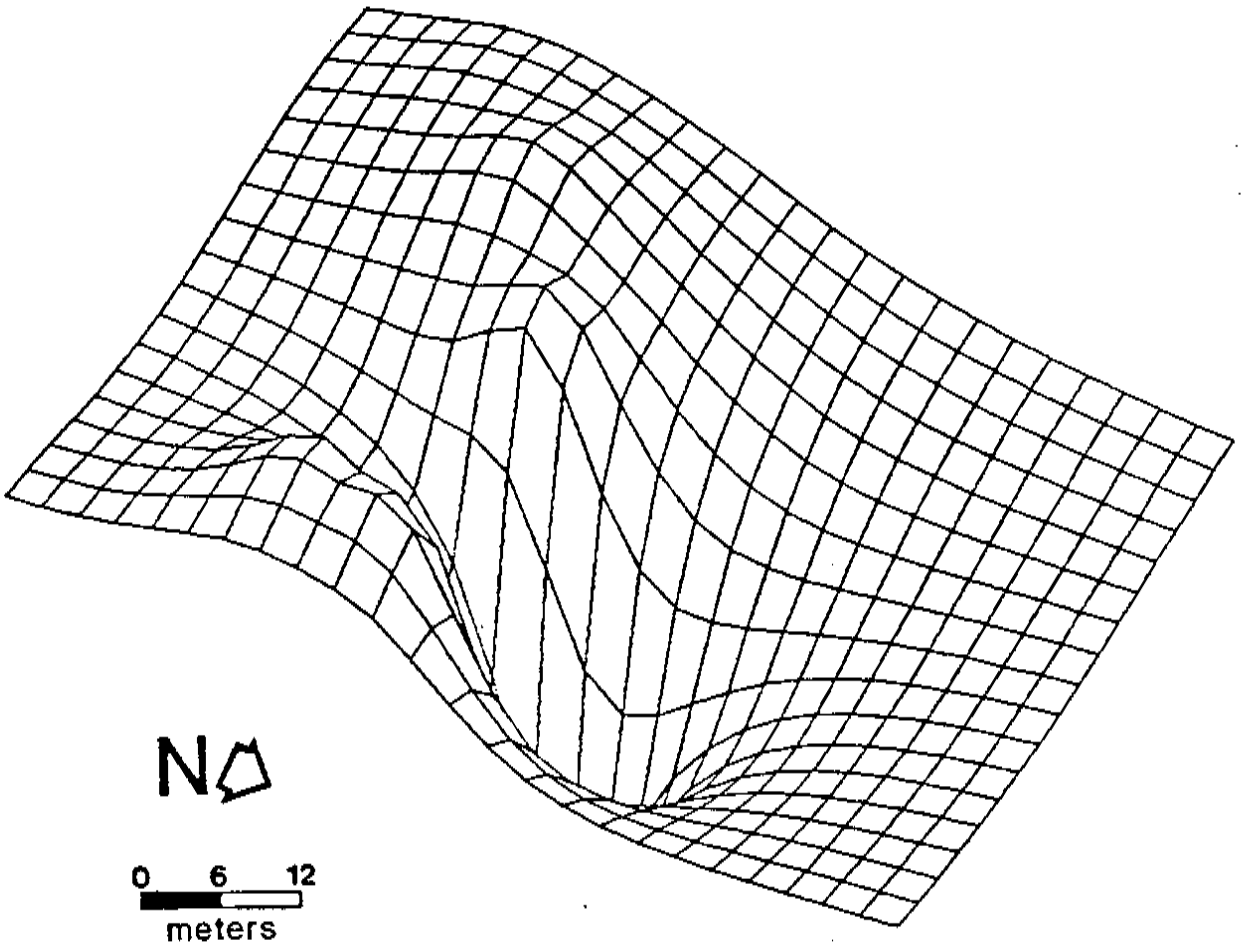


FIGURE 25

Surface View No. 2 – Basin A

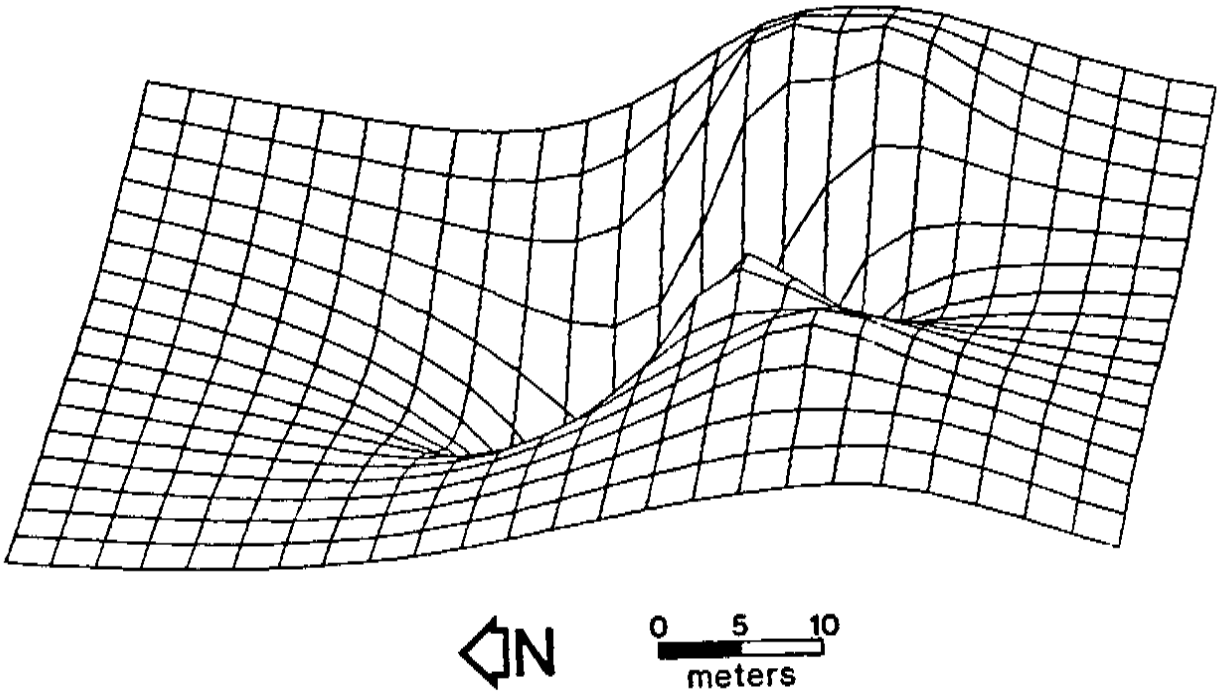


FIGURE 26

Surface View No. 3 - Basin A

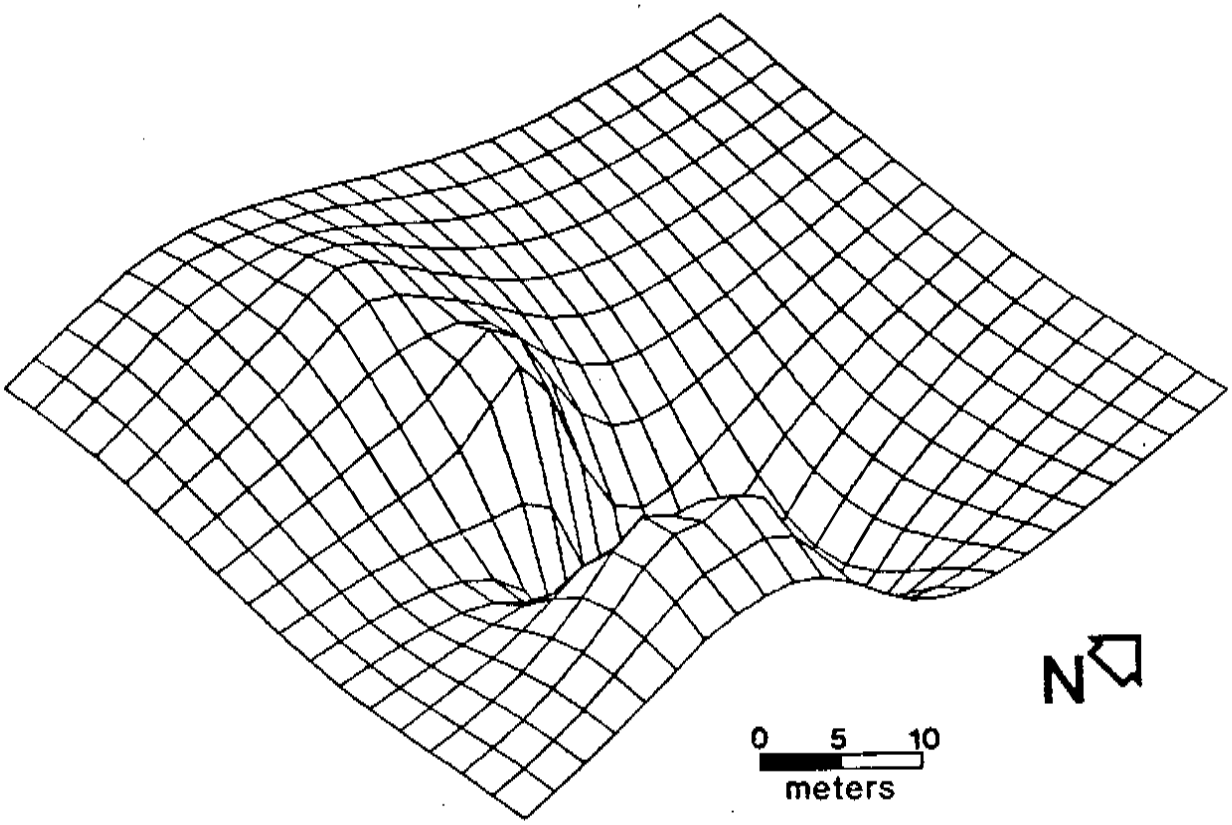


FIGURE 27

Surface View No. 4 – Basin A

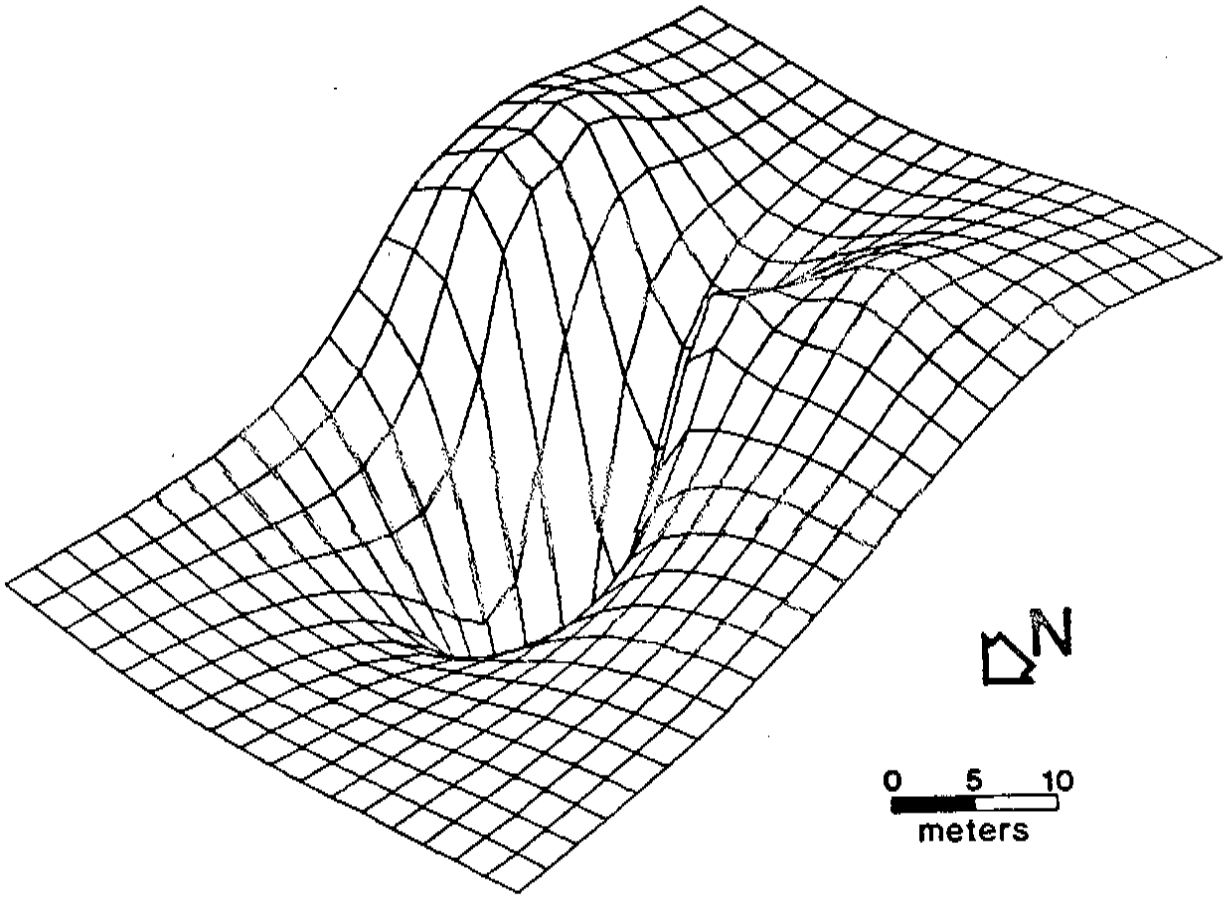
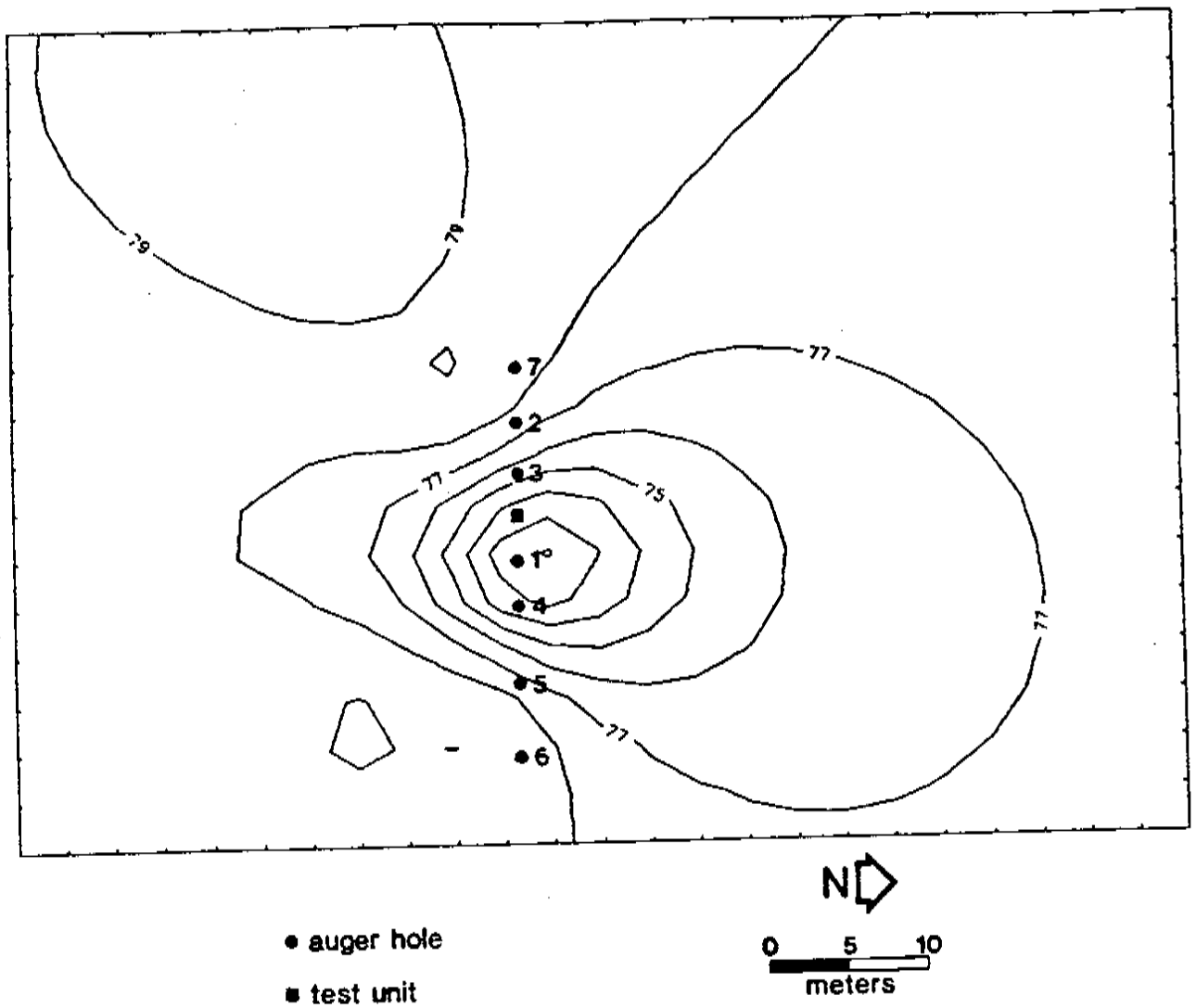


FIGURE 28

Test Unit Placement – Basin A



the feature was reconstructed (Figure 29). Figure 30 shows the profile of the test unit in the center of the bay/basin feature. Beneath a plow zone and slope wash layer approximately 55 cm thick lay a dark organic swamp layer approximately 10 centimeters thick. This organic layer was in turn underlain by light gray mottled sandy clay layer which extended a depth of 230 centimeters below the surface. Excavations were terminated at this depth due to ground water. Portions of the soil in the unit were screened, but no artifacts were recovered. The sandy clay contained much visible organic material, mostly plant root fragments, throughout its depth, and samples were taken for soil and pollen analysis. Results of these analyses are noted in Appendix VI.

Analyses of soil samples shows some significant changes in deposition. Changes in soil chemistry and clay size particle distributions are related to normal pedogenic profile development. However, silt and sand-sized particles show more varied distributions. From 40 cm to 140 cm in depth, there is a dramatic decrease in sand-sized particles and an increase in silt-sized particles. At 140 cm below surface there is a sand lense underlain by more silty sediments. Preliminary scans of pollen samples show abundant pollen, more than 11,000 grains per cc from the lower soil horizons below 130 cm. The abundant pine pollen at these depths suggest an early Holocene age for these sediments. The abundant silt-sized soil particles post-dating these materials may be equated with an early-middle Holocene episode of wind-blown deposition within the bay/basin. A similar depositional sequence is noted at another bay/basin by Rasmussen (1958) and at a sinkhole feature in northern Delaware (Custer and Griffith 1984).

In sum, the excavations at Basin A show that there are abundant preserved plant remains and pollen in the bay/basin features in cultivated fields. Because these features are drained it is possible to excavate deep units and expose deep profiles. These deep profiles are especially instructive because the pollen samples can be compared to column soil sample data to more completely understand the development of the bay/basin features. Exposure of such deep profiles is not possible in the bay/basin features which contain standing water. Unfortunately, cultivation of these features removes the top portion of the developmental soil sequence, especially at the bay/basin rim and makes it difficult to understand the changing size of the bay/basin features through time. However, these attributes of bay/basin features can be studied at the unplowed features. Thus in future data recovery programs it will be important to consider the pollen and soil data both from "dry" bay/basin features in cultivated fields and "wet" bay/basin features in unplowed settings.

FIGURE 29

Stratigraphic Profile – Basin A

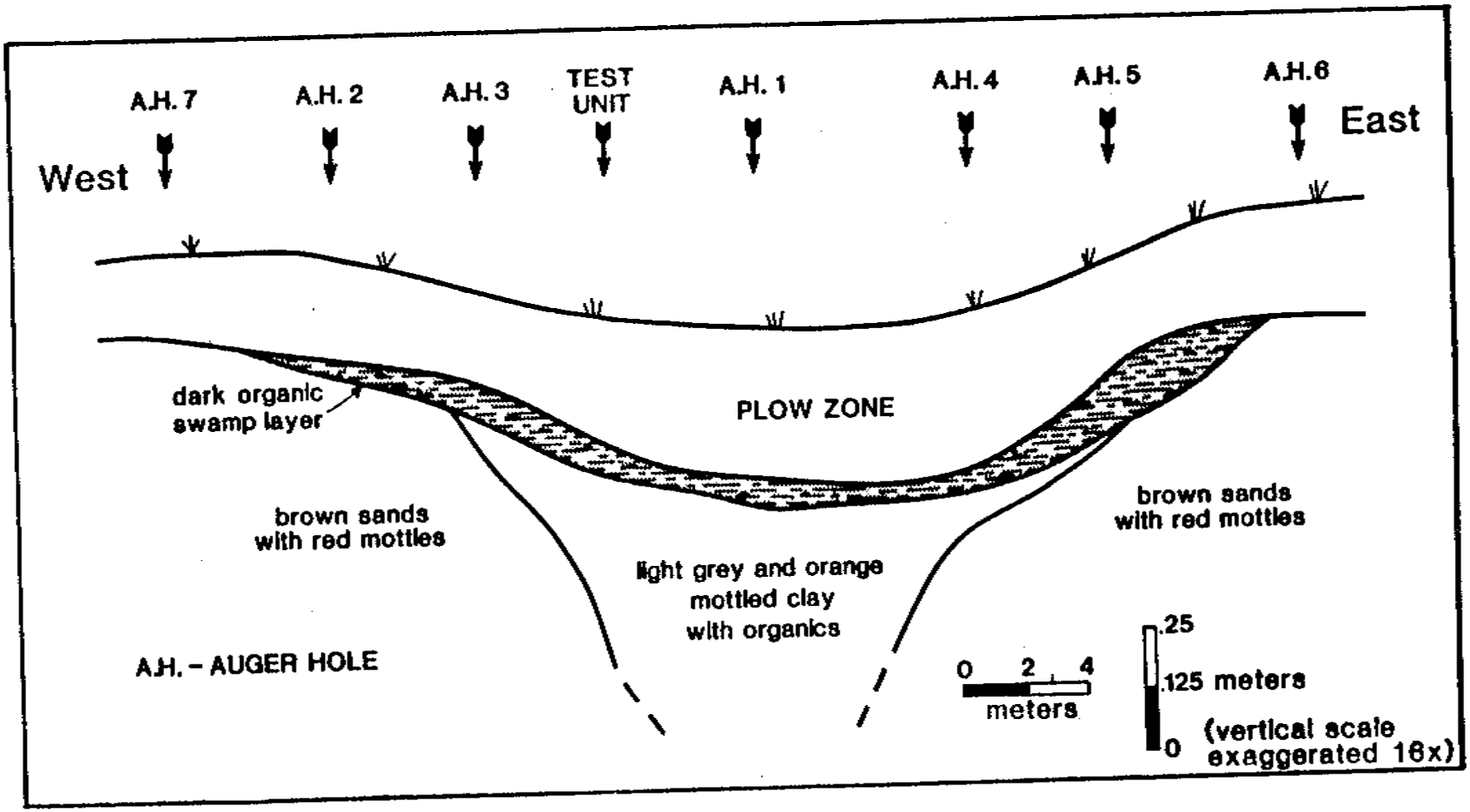
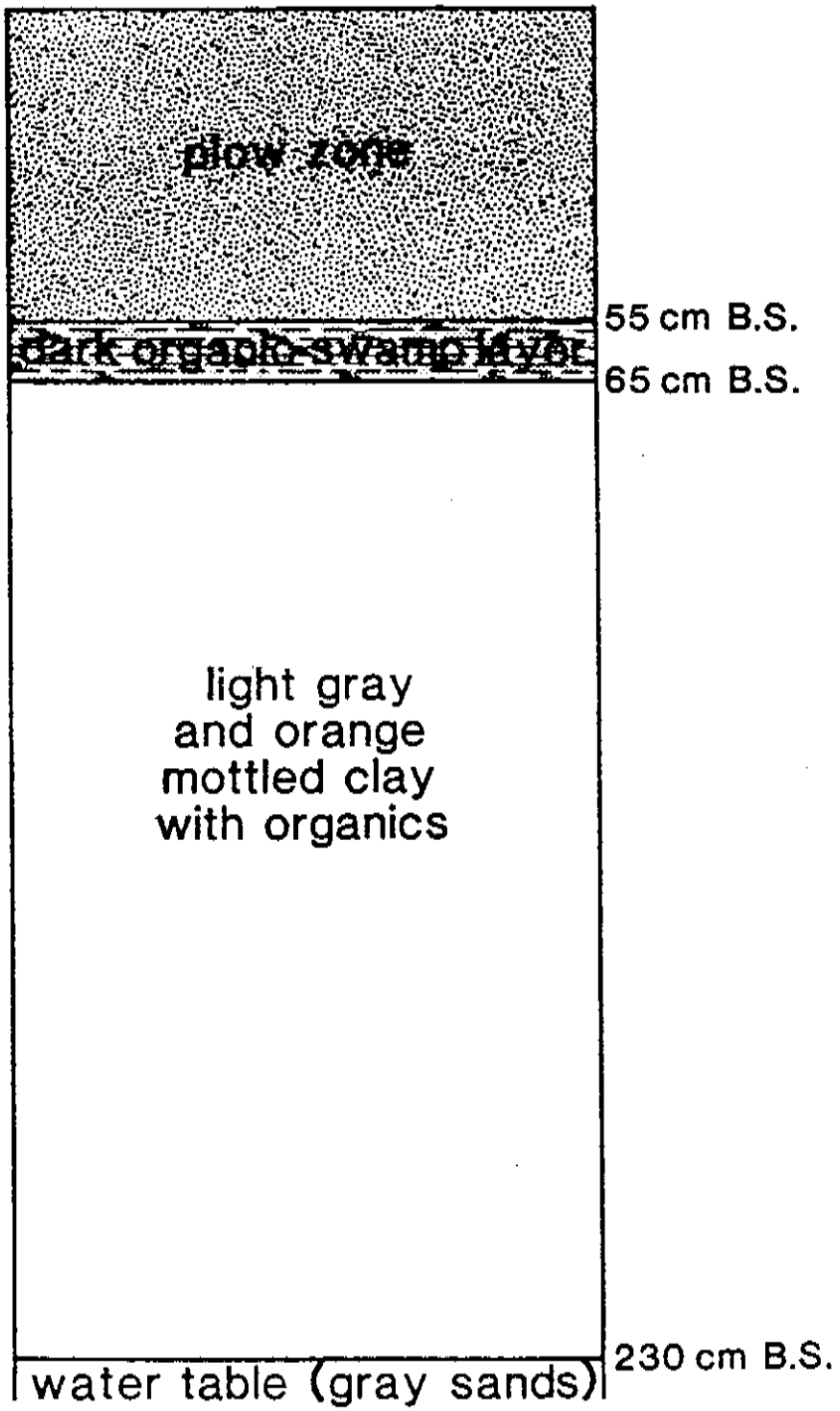


FIGURE 30

Basin A Unit Profile



HISTORIC SITE SURVEY RESULTS

This section of the report provides a description of the survey of standing structures and potential historical archaeological sites in each of the three project areas. The specific sites tested were those noted in the original Route 13 Planning Study (Custer et al. 1984: Appendix II, Appendix III). The purpose of this survey was to assess the archaeological potential of each standing structure and potential historic archaeological site as indicated by historic maps. These types of sites were field checked because the initial planning study only noted the presence of a mapped structure, or set of structures on a historic map or the presence of a standing structure in the BAHP inventory files.

As noted in the initial description of the field research methods, a series of variables were recorded in order to indicate the state of site preservation, the possibility of the site having multiple functions, and the size and density of the archaeological resources. Specific variables recorded included 1) the number and type of original outbuildings extant, which was assumed to reflect the degree to which a site had multiple functions and exhibited a range of well-defined activity/functional loci; 2) the visible disturbance levels at the site which were assumed to indicate the degree of preservation of the archaeological site; and 3) the number and type of archaeological features present, which was assumed to reflect the size and density of the material culture present at the site. The archaeological potential was derived from a subjective weighting of these three variables. The tables presented below list the results of the field check including the archaeological potential of each location visited. Historic significance data contained were obtained from Appendices II and III of the initial planning report (Custer et al. 1984). The values for the historic significance and the archaeological potential were then averaged to produce an overall cultural resource potential. This assessment was considered to be most important for the planning aspects of the present project.

St Georges Area. Table 9 provides a summary description of the historic sites surveyed in the St. Georges area and Figures 31 and 32 show their locations. In general, the sites within this area were the most poorly preserved within the present project area. The survey found that the locations had been heavily disturbed through soil erosion or machine disturbance. However, what undisturbed sites exist in the area such as N-5044 (agricultural complex, Plate 14), generally offer a high potential for intact subsurface features. Within the entire area, only two sites were given a high overall cultural resource potential. Historic resource locations #26 (agricultural complex) and #27 (agricultural tenant residence) in Subarea 3 both contained deep archaeological features and offer the potential for the recovery of material culture in a good context. The data recovered would provide significant comparative data for analysis with similarly dated materials from both rural and urban

KEY TO TABLES 9-11

Site Number - CRS Number assigned by the SHPO (N####), or archaeological resource number from Custer et al. (1984: Appendix III)

Hundred - Hundred within which the site is located

USGS Quad - USGS 7.5' quadrangle within which the site is located

Date - Estimated date of the structure

Functions - One or more functions of the structure

AGBLG	-	Agricultural Outbuilding
AGCX	-	Agricultural Complex
AGMCX	-	Agricultural-Mill Complex
AGTEN	-	Agriclutural Tenant Dwelling/Farm
ALMHSE	-	Almshouse
BANK	-	Bank
BRID	-	Bridge
BSSH	-	Blacksmith/Whitesmith Shop
CAUWY	-	Causeway
CCBLG	-	Canal Company Building
CEM	-	Cemetary
CHUR	-	Church
COMM	-	Commerical Structure
DWCX	-	Dwelling Complex
EST	-	Estate
GMCX	-	Gristmill Complex
GOVBLG	-	Government Building
HISTD	-	Historic District
HOT	-	Hotel
INDTEN	-	Industrial Tenant
LANOP	-	Landing Operation
LMKILN	-	Lime Kiln
LTHSE	-	Lighthouse
MANUFY	-	Manufactory
MMCX	-	Multiple-Mill Complex
MWHSE	-	Migrant Worker House
PEACH	-	Peach House
PEAORC	-	Peach Orchard
PHYS	-	Physician's Office
PLANT	-	Plantation
PO	-	Post Office
RR	-	Railroad Bed
RRR	-	Railroad-related
RRSTA	-	Railroad Station
RT	-	Racetrack
SCH	-	School
SCOSTA	-	Stagecoach Station
SERVST	-	Service Station
SLAVQ	-	Slave Quarters
SMCX	-	Sawmill Complex
SOMCX	-	Sorghum Mill Complex

STO	-	Store
STRUC	-	Structure
TAV	-	Tavern, Inn
TENANT	-	Tenant House
VESSEL	-	Vessel(sunken)
WARE	-	Warehouse
WKDW	-	Worker Dwelling
WKSH	-	Workshop

Historic Signif. - Historic Significance of the Site

Primary Disturb. - Primary Disturbance to the Site

Number of Outbuildings - Number of Outbuildings on the Site

Number of Features - Number of Features on the Site

Archaeo. Potent. - Archaeological Potential of the Site

Total Resource Potent. - Total Resource Potential is the combined average of the Historic Significance and Archaeological Potential of the Site.

TABLE 4: ST GEORGE HISTORIC SITES - SUMMARY DESCRIPTION

SITE NUMBER	NUMBERED	USGS QUAD	DATE	FUNCTIONS	HISTORIC SIGNIF.	PRIMARY DISTURB.	NUMBER OF OUTBUILDINGS	NUMBER OF FEATURES	ARCHAEO. POTENT.	TOTAL RESOURCE POTENT.
51	RED LION	SAINT GEORGES	P1849	SCH	M	REMOVL STRCT	0	-1	M	2
52	RED LION	SAINT GEORGES	P1849	DOMX	M	REMOVL STRCT	0	2	M	2
53	RED LION	SAINT GEORGES	P1868	DOTEN	M	REMOVL STRCT	0	-1	M	2
54	RED LION	SAINT GEORGES	P1849	DOTEN	M	REMOVL STRCT	0	-1	L	3
55	RED LION	SAINT GEORGES	P1849	DOTEN	M	REMOVL STRCT	0	-1	L	3
56	RED LION	SAINT GEORGES	P1849	DOTEN	M	REMOVL STRCT	0	-1	L	3
57	RED LION	SAINT GEORGES	P1849	DOMX	M	REMOVL STRCT	0	0	L	4
59	RED LION	SAINT GEORGES	P1849	DOMX	M	TOTAL PLOW	0	0	L	4
60	RED LION	SAINT GEORGES	1849-1868	DOMX	M	REMOVL STRCT	4	2	M	1
206	RED LION	SAINT GEORGES	P1849	DOMX	M	REMOVL STRCT	0	1	M	1
207	RED LION	SAINT GEORGES	1849-1868	DOTEN	M	TOTAL PLOW	0	0	L	4
208	RED LION	SAINT GEORGES	P1849	DOMX	M	TOTAL PLOW	0	0	L	4
1027	RED LION	SAINT GEORGES	1868-1893	DOMX	L	MOUTNE DISTU	0	0	L	4
N1991	RED LION	SAINT GEORGES	1920	RRID	M	UNDISTURBED	7	-1	M	2
N9444	RED LION	SAINT GEORGES	A1893	DOMX	M	REMOVL STRCT	0	0	L	4
61	RED LION	SAINT GEORGES	P1849	DOMX	M	REMOVL STRCT	0	0	L	4
62	RED LION	SAINT GEORGES	1849-1868	DOTEN	M	TOTAL PLOW	0	0	L	4
63	RED LION	SAINT GEORGES	1849-1868	DOTEN						

FIGURE 31
Standing Structure Data from BAHP Files – St. Georges Area

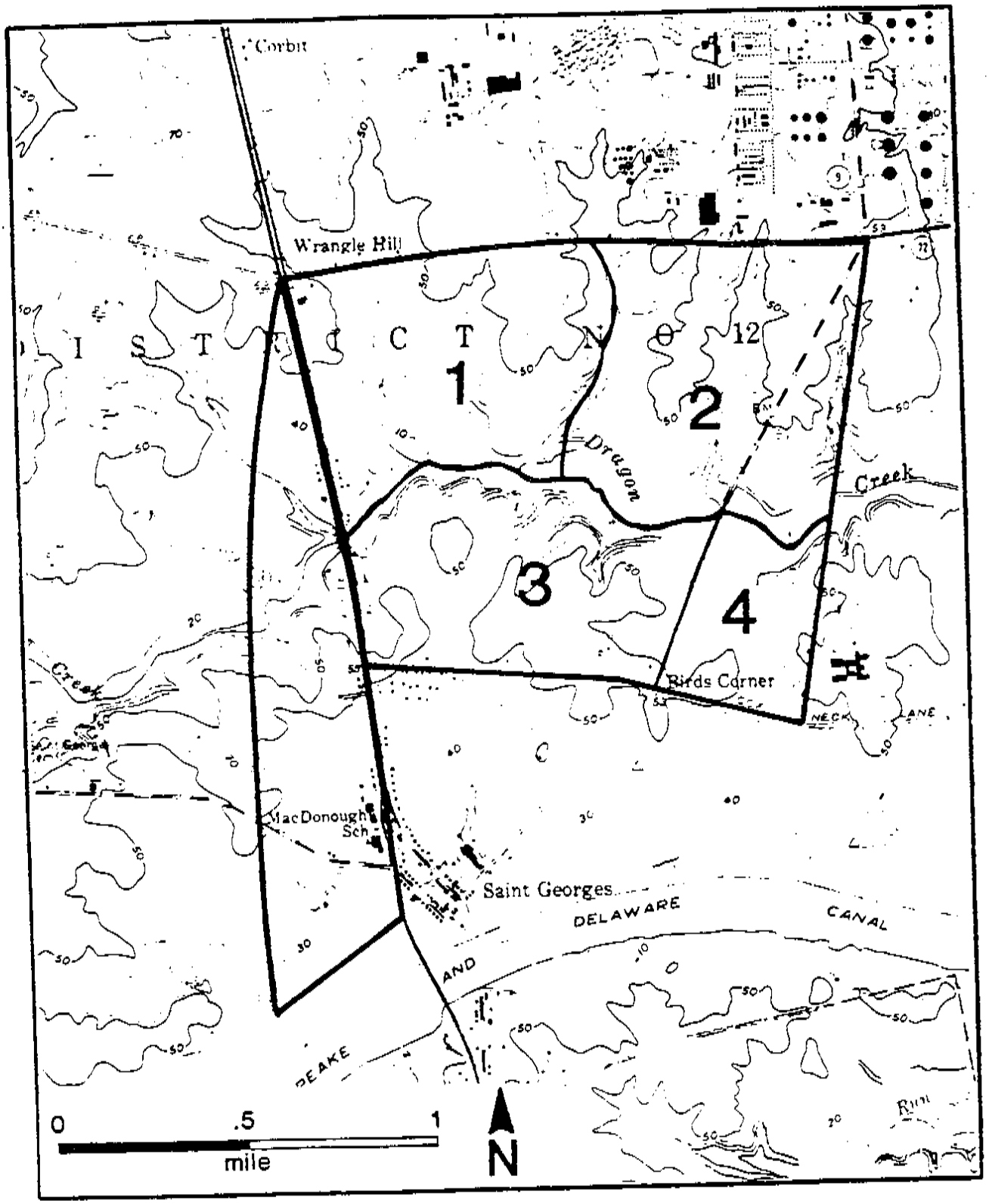


FIGURE 32
Historic Archaeological Resources Data - St. Georges Area

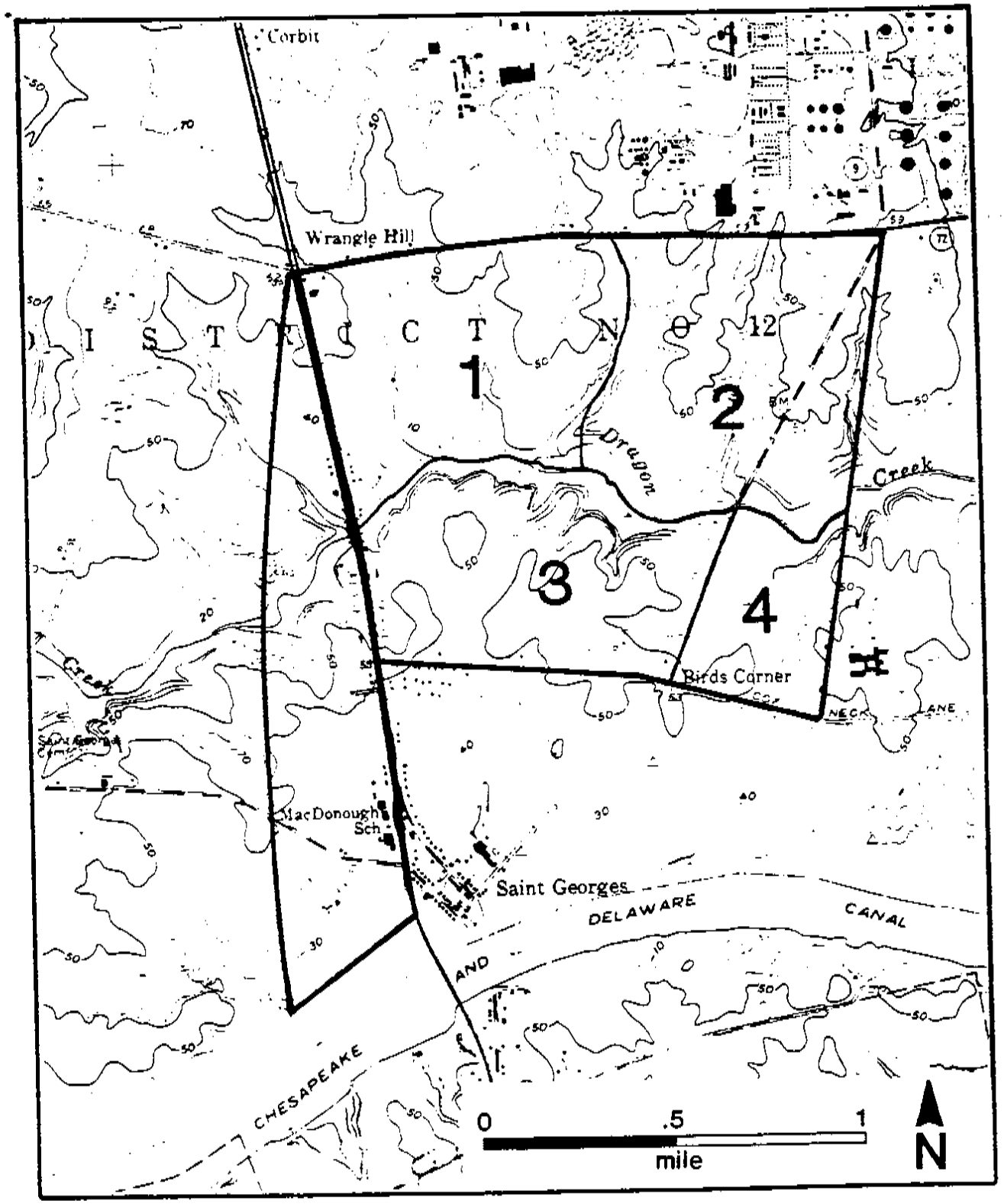


PLATE 14

Structure N-5044, Looking North from Cox Neck Lane

contexts within Delaware.

Appoquinimink Area. Table 10 provides a summary description of the sites surveyed in the Appoquinimink area and Figures 33 and 34 show their locations.

The present survey identified one of the best preserved "Peach Boom" period sites within the entire planning corridor. The location, N-432, known as "Monterey" (Subarea 6), contains an undisturbed assemblage of the original mid-19th century support buildings associated with the estate. Since no sites from this period or socio-economic level have been excavated in Delaware, it offers tremendous potential to yield information on the material culture of this period of Delaware history.

The "industrial" historic site type was well represented in the area. The intersection at Matthews Corner, southeast of Odessa, comprised a mid-18th century to mid-19th century manufacturing/industrial hamlet. The Duncan Beard site, N-417, the residence and shop of a well-known Delaware silversmith and cabinetmaker, presents a unique opportunity to examine the archaeological evidence from this site type. The data recovered from the excavation could be compared to sites of this period and function already excavated in New England and Williamsburg and would provide a foundation for future work in Delaware and surrounding states. Also contained within this hamlet was location #255, a mid-19th century tile manufactory, and #259, a mid-19th century schoolhouse. The range of site types at Matthews Corner provides a settlement pattern very similar to that already investigated in the Delaware Route 4 Corridor and the data recovered could be effectively compared to the Wilson-Slack Agricultural Complex (Coleman et. al. 1984).

Delaware's agricultural history is also well represented in the Appoquinimink area. One site, N-5141 (agricultural complex, Plate 15), is a particulary well-preserved standing structure and offers the potential for the recovery of significant architectural and material culture information. The only sites attributable to the Colonial Settlement Period (1638-1681) were also found in this area. Within the present study area, only N-1309, Drawyer's Causeway, was included in the planning subareas. While of only medium archaeological potential, the location is invaluable to our knowledge of early transportation in Delaware.

Blackbird Area. Table 11 provides a listing of historic sites surveyed in the Blackbird area and Figures 35 and 36 shows site locations. In general, the historic resources within the Blackbird area have suffered the most disturbance of the three study areas as a result of increased agricultural production. The result has been the removal of numerous structures and the plowing of previously undisturbed sites. Nevertheless, several historic cultural resources have been singled out for special mention.

TABLE 10: APPOQUINIMINK HISTORIC SITES - SUMMARY DESCRIPTION

SITE NUMBER	NAMED	USGS QUAD	DATE	FUNCTIONS		HISTORIC SIGNIF.	PRIMARY DISTURB.	NUMBER OF OUTBUILDINGS	NUMBER OF FEATURES	ARCHAEO. POTENT.	TOTAL RESOURCE POTENT.
N5061	SAINT GEORGES	MIDDLETOWN	P1802	BARN		N	REMOVL STRCT	4	1	H	1
160	SAINT GEORGES	MIDDLETOWN	1849-1868	INDIAN		N	REMOVL STRCT	0	-1	M	2
161	SAINT GEORGES	MIDDLETOWN	P1802	BARN		N	REMOVL STRCT	0	-1	M	2
162	SAINT GEORGES	MIDDLETOWN	P1849	BARN		N	REMOVL STRCT	0	-1	M	2
163	SAINT GEORGES	MIDDLETOWN	P1849	BARN		N	REMOVL STRCT	0	-1	L	3
N1702	SAINT GEORGES	MIDDLETOWN	P1849	BARN		N	REMOVL STRCT	0	0	L	3
N1703	SAINT GEORGES	MIDDLETOWN	1681	BRID		N	MCHINE DESTU	0	-1	M	2
164	SAINT GEORGES	MIDDLETOWN	1849-1868	INDIAN		N	REMOVL STRCT	0	-1	M	1
165	SAINT GEORGES	MIDDLETOWN	1849-1868	INDIAN		N	REMOVL STRCT	0	-1	M	1
N5141	SAINT GEORGES	MIDDLETOWN	A1849	DWLG		N	PRIMR PLOW	1	-1	M	1
179	SAINT GEORGES	MIDDLETOWN	P1849	BARN			PRIMR PLOW	5	2	M	1
183	SAINT GEORGES	MIDDLETOWN	P1849	BARN		N	REMOVL STRCT	0	0	M	2
184	SAINT GEORGES	MIDDLETOWN	1849-1868	DWLG		N	REMOVL STRCT	0	0	M	1
915	SAINT GEORGES	MIDDLETOWN	1849-1868	INDIAN		N	REMOVL STRCT	0	0	L	3
916	SAINT GEORGES	MIDDLETOWN	1849-1868	INDIAN		N	REMOVL STRCT	0	0	L	3
917	SAINT GEORGES	MIDDLETOWN	1849-1868	INDIAN		N	REMOVL STRCT	0	0	L	3
918	SAINT GEORGES	MIDDLETOWN	1849-1868	ARTFN		N	REMOVL STRCT	0	0	L	3
920	SAINT GEORGES	MIDDLETOWN	1868-1893	DWLG		M	REMOVL STRCT	0	0	M	3
926	SAINT GEORGES	MIDDLETOWN	1868-1893	ARTFN		M	REMOVL STRCT	0	0	L	4
927	SAINT GEORGES	MIDDLETOWN	1868-1893	INDIAN		M	REMOVL STRCT	0	0	L	4
N432	SAINT GEORGES	MIDDLETOWN	1850	FENCH	FENCE	U	UNDISTURBED	0	2	H	1
N5150	SAINT GEORGES	MIDDLETOWN	P1849	BARN		N	UNDISTURBED	6	-1	H	1
N5151	SAINT GEORGES	MIDDLETOWN	P1849	BARN		N	UNDISTURBED	6	-1	H	1
N5160	SAINT GEORGES	MIDDLETOWN	1849-1868	BARN		N	MCHINE DESTU	3	-1	M	2
190	SAINT GEORGES	MIDDLETOWN	1849-1868	TENANT		N	MCHINE DESTU	0	-1	L	3
191	SAINT GEORGES	MIDDLETOWN	1849-1868	TENANT		N	REMOVL STRCT	0	-1	M	2
914	SAINT GEORGES	MIDDLETOWN	1868-1893	ARTFN		M	REMOVL STRCT	0	0	L	4
N5178	SAINT GEORGES	MIDDLETOWN	P1849	BARN		N	LNDSCAPNG	4	-1	M	1
N5179	SAINT GEORGES	MIDDLETOWN	P1849	BARN		N	UNDISTURBED	8	1	H	1
N5177	SAINT GEORGES	MIDDLETOWN	P1849	BARN		N	REMOVL STRCT	5	-1	M	2
N154	SAINT GEORGES	MIDDLETOWN	1770	CHUR	CEM	N	UNDISTURBED	0	-1	H	1
N5049	SAINT GEORGES	MIDDLETOWN	1671	BARN		N	REMOVL STRCT	0	-1	M	2
215	SAINT GEORGES	MIDDLETOWN	P1849	BARN		N	LNDSCAPNG	7	2	H	1
216	SAINT GEORGES	MIDDLETOWN	P1849	BARN		N	SOIL ERSN	3	1	H	1
N110	SAINT GEORGES	MIDDLETOWN	1846	FENCH	FENCE	N	REMOVL STRCT	3	-1	M	2
229	APPOQUINIMINK	MIDDLETOWN	P1802	BARN		N	REMOVL STRCT	0	-1	M	2
230	APPOQUINIMINK	MIDDLETOWN	P1849	INDIAN		N	REMOVL STRCT	0	-1	M	3
231	APPOQUINIMINK	MIDDLETOWN	1849-1868	INDIAN		N	LNDSCAPNG	7	-1	H	1
232	APPOQUINIMINK	MIDDLETOWN	1849-1868	STRUC		N	LNDSCAPNG	3	-1	M	1
821	APPOQUINIMINK	MIDDLETOWN	1849-1868	BARN		N	MCHINE DESTU	0	2	M	2
N5099	APPOQUINIMINK	MIDDLETOWN	1803	BARN		U	LNDSCAPNG	3	1	M	2
N5098	APPOQUINIMINK	MIDDLETOWN	P1849	BARN		U	LNDSCAPNG	4	1	M	2
951	APPOQUINIMINK	MIDDLETOWN	P1849	ARTFN		U	TOTAL PLOW	0	0	L	4
953	APPOQUINIMINK	MIDDLETOWN	1849-1868	ARTFN		U	TOTAL PLOW	0	0	L	4
955	APPOQUINIMINK	MIDDLETOWN	1849-1868	BARN		U	TOTAL PLOW	0	0	L	4
957	APPOQUINIMINK	MIDDLETOWN	1849-1868	ARTFN		U	TOTAL PLOW	0	0	L	4
960	APPOQUINIMINK	MIDDLETOWN	1849-1868	ARTFN		U	TOTAL PLOW	0	0	L	4
962	APPOQUINIMINK	MIDDLETOWN	1849-1868	BARN		U	TOTAL PLOW	0	0	L	4
N5102	APPOQUINIMINK	MIDDLETOWN	P1849	OUTBLDG		U	UNDISTURBED	4	1	H	1
N5103	APPOQUINIMINK	MIDDLETOWN	1826	BARN		U	LNDSCAPNG	2	-1	M	2

see key on page 96 for terminology descriptions

TABLE 10 (CONT.)

SITE NUMBER	HUNDRED	USGS MAP	DATE	FUNCTIONS		HISTORIC SIGNIF.	PRIMARY DISTURB.	NUMBER OF OUTBUILDINGS	NUMBER OF FEATURES	ARCHAEO. POTENT.	TOTAL RESOURCE POTENT.
[illegible]	[illegible]	MIDDLETOWN	1620-1950	DOCK		H	REMOVL STRCT	3	3	H	1
[illegible]	[illegible]	MIDDLETOWN	1849-1868	ASTEN		H	TOTAL FLOW	0	0	L	4
[illegible]	[illegible]	MIDDLETOWN	1849-1868	MANUFY		H	REMOVL STRCT	0	0	L	3
[illegible]	[illegible]	MIDDLETOWN	P1849	ASTEN		H	PRTIAL FLOW	0	1	H	1
[illegible]	[illegible]	MIDDLETOWN	1849-1868	ASTEN		H	TOTAL FLOW	0	0	L	4
[illegible]	[illegible]	MIDDLETOWN	1849-1868	SCH		H	TOTAL FLOW	0	0	L	4
[illegible]	[illegible]	MIDDLETOWN	P1849	ASTEN		H	TOTAL FLOW	0	0	L	4
[illegible]	[illegible]	MIDDLETOWN	C1767	MANUFY	DWLG	H	REMOVL STRCT	0	-1	H	1
[illegible]	[illegible]	MIDDLETOWN	1849-1868	ASTEN		H	REMOVL STRCT	0	0	L	4
[illegible]	[illegible]	MIDDLETOWN	1849-1868	ASTEN		H	REMOVL STRCT	0	0	L	4
[illegible]	[illegible]	MIDDLETOWN	1868-1913	STRUC		M	REMOVL STRCT	0	0	L	4
[illegible]	[illegible]	MIDDLETOWN	1868-1913	STRUC		M	REMOVL STRCT	0	0	L	4
[illegible]	[illegible]	MIDDLETOWN	1773	AGRI		H	UNDISTURBED	2	1	H	1
[illegible]	[illegible]	MIDDLETOWN	P1849	AGRI	PTHSRC	H	UNDISTURBED	7	-1	H	1
[illegible]	[illegible]	MIDDLETOWN	1849-1868	DOCK		H	REMOVL STRCT	0	-1	M	3
[illegible]	[illegible]	MIDDLETOWN	1849-1868	ASTEN		H	REMOVL STRCT	1	-1	L	3
[illegible]	[illegible]	MIDDLETOWN	1849-1868	ASTEN		H	REMOVL STRCT	0	-1	M	2
[illegible]	[illegible]	MIDDLETOWN	P1849	AGRI		H	UNDISTURBED	8	-1	H	1

see key on page 96 for terminology descriptions

FIGURE 33

Standing Structure Data from BAHP Files – Appoquinimink Area

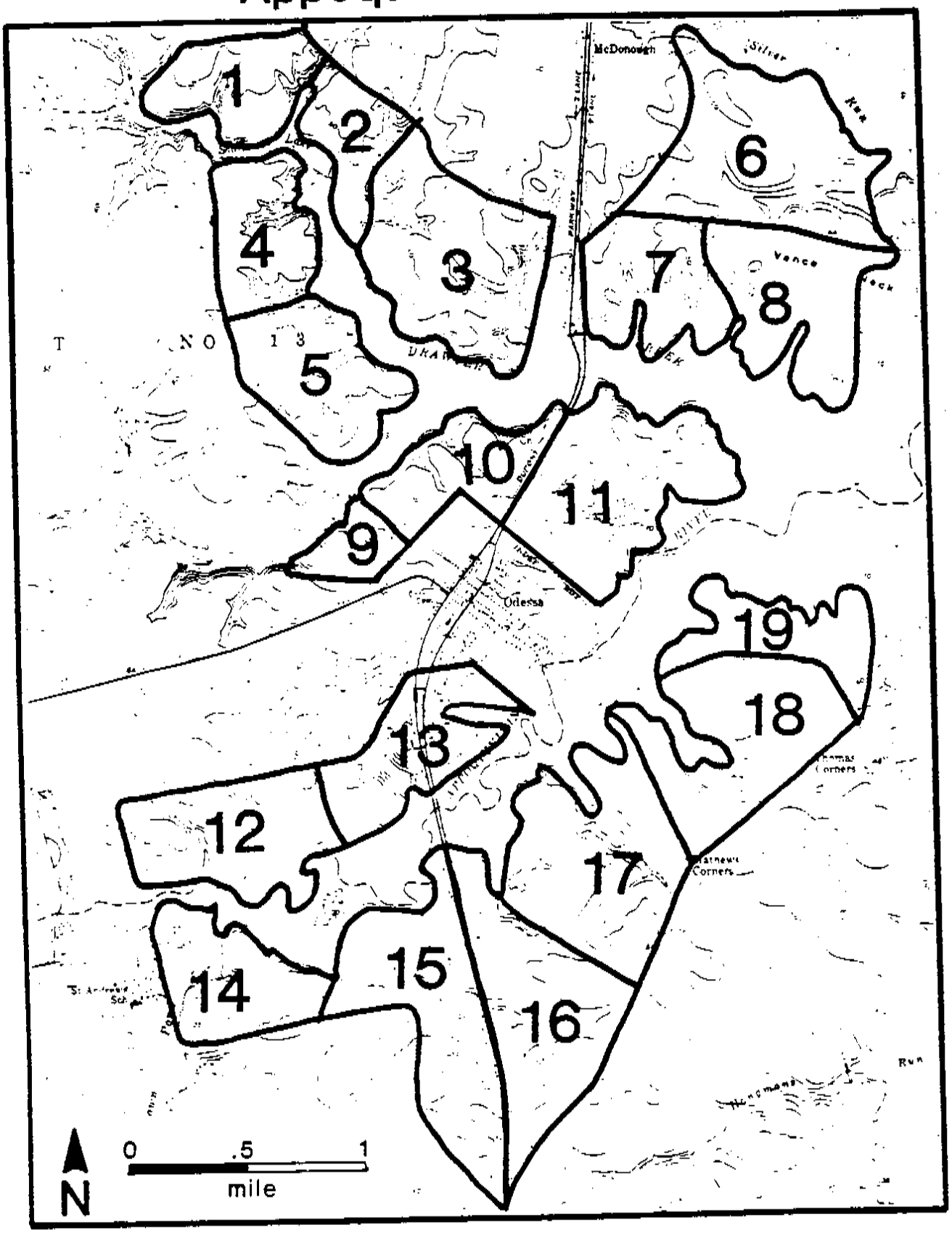


FIGURE 34

Historic Archaeological Resources Data – Appoquinimink Area

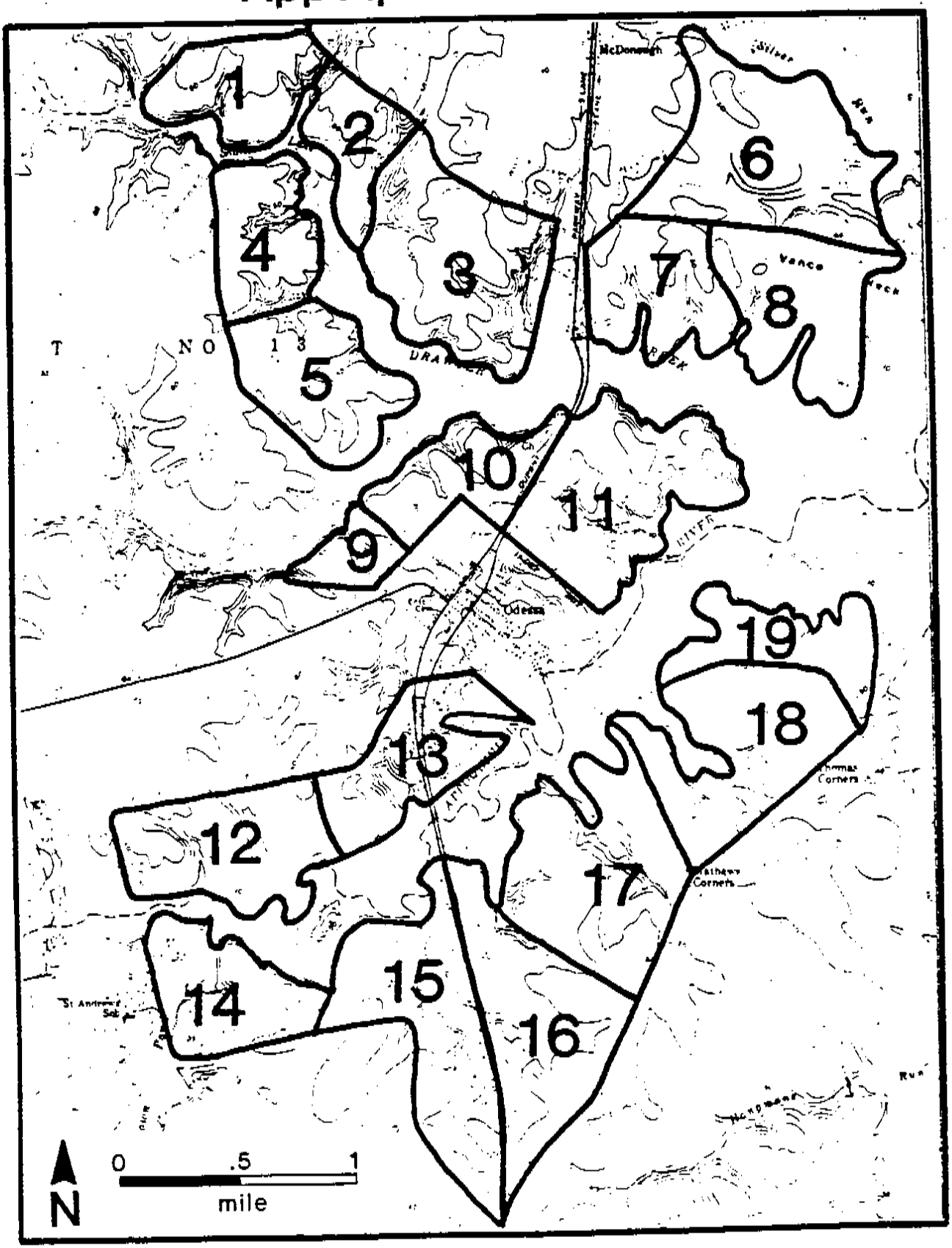


PLATE 15

Structure N-5141, Looking West from Road 428

TABLE 11: BLACKBIRD HISTORIC SITES - SUMMARY DESCRIPTION

SITE NUMBER	HUNDRED	USGS QUAD	DATE	FUNCTIONS		HISTORIC SIGNIF.	PRIMARY DISTURB.	NUMBER OF OUTBUILDINGS	NUMBER OF FEATURES	ARCHAEO. POTENT.	TOTAL RESOURCE POTENT.
N5919	APPOQUINIMINK	MIDDLETOWN	P1849	AGCX		H	UNDISTURBED	4	-1	H	1
284	APPOQUINIMINK	MIDDLETOWN	P1849	AGCX		H	UNDISTURBED	2	1	H	1
872	APPOQUINIMINK	MIDDLETOWN	1868-1893	AGCX		H	REMOVL STRCT	0	0	H	4
879	APPOQUINIMINK	MIDDLETOWN	1849-1868	DWCX		H	REMOVL STRCT	0	1	H	1
880	APPOQUINIMINK	MIDDLETOWN	1868-1893	STRUC		M	REMOVL STRCT	0	0	M	4
882	APPOQUINIMINK	MIDDLETOWN	1849-1868	AGCX		H	DETERIORATED	4	-1	H	1
886	APPOQUINIMINK	MIDDLETOWN	1849-1868	AGCX		H	REMOVL STRCT	0	-1	H	1
N423	APPOQUINIMINK	MIDDLETOWN	1847	CHUR	CEM	H	UNDISTURBED	2	1	H	1
N5857	APPOQUINIMINK	MIDDLETOWN	P1849	AGCX		H	UNDISTURBED	2	1	H	1
N5858	APPOQUINIMINK	MIDDLETOWN	C1940	AGCX		M	UNDISTURBED	0	-1	M	2
281	APPOQUINIMINK	MIDDLETOWN	1849-1868	AGCX		H	DETERIORATED	3	-1	H	1
283	APPOQUINIMINK	MIDDLETOWN	1849-1868	DWCX		H	REMOVL STRCT	0	0	L	4
285	APPOQUINIMINK	MIDDLETOWN	P1849	AGTEN		H	REMOVL STRCT	0	-1	L	4
357	APPOQUINIMINK	MIDDLETOWN	1849-1868	DWCX		H	UNDISTURBED	2	-1	H	1
843	APPOQUINIMINK	MIDDLETOWN	1868-1893	DWCX		H	REMOVL STRCT	0	-1	M	3
844	APPOQUINIMINK	MIDDLETOWN	1868-1893	DWCX		H	REMOVL STRCT	0	-1	M	3
N3918	APPOQUINIMINK	MIDDLETOWN	P1849	LANDF		H	SOIL EROSN	3	0	H	1
N3919	APPOQUINIMINK	MIDDLETOWN	P1849	AGCX		H	UNDISTURBED	4	-1	H	1
N3920	APPOQUINIMINK	MIDDLETOWN	C1690	AGCX		H	MCHINE DISTU	3	-1	M	2
N3921	APPOQUINIMINK	MIDDLETOWN	1849-1868	AGTEN		H	REMOVL STRCT	0	-1	H	1
282	APPOQUINIMINK	MIDDLETOWN	P1849	AGCX		H	REMOVL STRCT	2	1	L	4
841	APPOQUINIMINK	MIDDLETOWN	1849-1868	DWCX	LANDF	H	REMOVL STRCT	0	-1	M	2
N5878	APPOQUINIMINK	MIDDLETOWN	P1849	AGCX		H	UNDISTURBED	4	-1	M	2
N5879	APPOQUINIMINK	MIDDLETOWN	1849-1868	AGTEN		H	REMOVL STRCT	4	1	H	1
N5887	APPOQUINIMINK	MIDDLETOWN	P1849	AGCX		H		6	1	H	1
N5896	APPOQUINIMINK	MIDDLETOWN		STRUC		H	PRTIAL PLOW	0	-1	U	3
286	APPOQUINIMINK	MIDDLETOWN	P1849	AGCX		H	PRTIAL PLOW	3	1	M	2
287	APPOQUINIMINK	MIDDLETOWN	1849-1868	AGTEN		H	REMOVL STRCT	0	-1	M	2
288	APPOQUINIMINK	MIDDLETOWN	1849-1868	UNSH	STO	H	REMOVL STRCT	0	-1	L	4
891	APPOQUINIMINK	MIDDLETOWN	1868-1893	DWCX		M		0	2	H	1
892	APPOQUINIMINK	MIDDLETOWN	1849-1868	AGCX		H	MCHINE DISTU	0	-1	L	4
N5855	APPOQUINIMINK	MIDDLETOWN	P1849	AGCX		H		6	-1	H	1
N5856	APPOQUINIMINK	MIDDLETOWN	P1849	AGTEN		H	REMOVL STRCT	4	-1	M	2
888	APPOQUINIMINK	CLAYTON	1849-1868	AGCX		H	MCHINE DISTU	0	-1	M	2
1156	APPOQUINIMINK	MIDDLETOWN	1868-1893	AGTEN		H	TOTAL PLOW	0	1	M	2
N5846	APPOQUINIMINK	CLAYTON	P1849	AGCX		H	UNDISTURBED	6	1	H	1
N5888	APPOQUINIMINK	MIDDLETOWN	1868-1893	AGCX		H	UNDISTURBED	3	1	H	1
290	APPOQUINIMINK	CLAYTON	1849-1868	AGCX		H	REMOVL STRCT	1	-1	M	2
833	APPOQUINIMINK	CLAYTON	1868-1893	AGCX		M	UNDISTURBED	3	-1	H	1
838	APPOQUINIMINK	CLAYTON	1849-1868	DWCX		H	MCHINE DISTU	2	-1	M	2
N5848	APPOQUINIMINK	CLAYTON	1849-1868	ARSTA	PO	H	MCHINE DISTU	0	-1	L	4
N5851	APPOQUINIMINK	CLAYTON	P1868	ARSTA	STO	H	UNDISTURBED	2	1	H	1
N5852	APPOQUINIMINK	CLAYTON	1868-1893	DWCX		M	MCHINE DISTU	3	-1	M	3
N5854	APPOQUINIMINK	CLAYTON	P1849	HSCX		H	UNDISTURBED	3	-1	H	1
388	BLACKBIRD	CLAYTON	P1849	STRUC		U	PRTIAL PLOW	0	-1	L	4
889	APPOQUINIMINK	MIDDLETOWN	1868-1893	AGTEN		M	REMOVL STRCT	0	0	M	4
890	APPOQUINIMINK	MIDDLETOWN	1849-1868	AGTEN		H	REMOVL STRCT	0	0	M	4
N131	APPOQUINIMINK	CLAYTON	1849-1868	HSCX		H	UNDISTURBED	4	-1	H	1
N5847	APPOQUINIMINK	CLAYTON	1880	DWCX		M	MCHINE DISTU	3	-1	M	2
N5849	APPOQUINIMINK	CLAYTON	LATE 19TH C.	BOTHER		M	UNDISTURBED	0	1	M	2

see key on page 96 for terminology descriptions

TABLE 11 (CONTD.)

SITE NUMBER	UNNAMED	TOWN	DATE	CONDITIONS	HISTORIC SIGNIF.	PRIMARY RECORD.	NUMBER OF OUTBUILDINGS	NUMBER OF FEATURES	ARCHAEOL. POTENT.	TOTAL RESOURCE POTENT.
[illegible]	[illegible]	CLAYTON	P 1860	POOR	N	REMOVE STRCT	0	-1 L		4
[illegible]	[illegible]	CLAYTON		POOR	N	MOBILE DWELL	2	-1 M		2
[illegible]	[illegible]	CLAYTON	1849-1868	AVG	N	LNDSCAPNG	1	1 M		2
[illegible]	UNNAMED	CLAYTON	P 1849	GOOD	N	REMOVE STRCT	0	-1 H		1
[illegible]	UNNAMED	CLAYTON	P 1849	GOOD	N	UNDISTURBED	1	1 H		1
[illegible]	UNNAMED	CLAYTON	P 1849	AVG	N	REMOVE STRCT	0	-1 H		1
[illegible]	UNNAMED	CLAYTON	1849-1868	AVG	N	REMOVE STRCT	0	1 M		2
[illegible]	UNNAMED	CLAYTON	P 1849	UNDTRMN	N	REMOVE STRCT	0	0 M		4
[illegible]	UNNAMED	CLAYTON	1849-1868	AVG	N	UNDISTURBED	6	1 H		1
[illegible]	UNNAMED	CLAYTON	1868-1893	GOOD	N	LNDSCAPNG	2	-1 M		2
[illegible]	UNNAMED	CLAYTON	1849-1868	AVG	N	REMOVE STRCT	1	-1 M		3
[illegible]	[illegible]	CLAYTON	1869	AVG	N	REMOVE STRCT	1	1 M		2
[illegible]	[illegible]	CLAYTON	P 1849	AVG	N	UNDISTURBED	4	-1 H		1
[illegible]	UNNAMED	CLAYTON	P 1849	AVG	N	TOTAL FLOW	0	0 M		4
[illegible]	UNNAMED	MIDDLETOWN	1849-1868	UNTRMN	N	TOTAL FLOW	0	0 M		4
[illegible]	UNNAMED	MIDDLETOWN	1849-1868	UNTRMN	N	REMOVAL STRCT	2	-1 M		2
[illegible]	UNNAMED	CLAYTON	P 1849	AVG	N	REMOVAL STRCT	0	0 M		4
[illegible]	UNNAMED	CLAYTON	P 1849	AVG	N	UNDISTURBED	4	-1 H		1
[illegible]	UNNAMED	CLAYTON	1849-1868	AVG	N	DETERIORATED	0	1 H		1
[illegible]	UNNAMED	CLAYTON	P 1849	AVG	N	UNDISTURBED	2	1 M		2
[illegible]	UNNAMED	CLAYTON	1868-1893	AVG	N	UNDISTURBED	0	-1 M		3
[illegible]	UNNAMED	CLAYTON	P 1849	AVG	N	REMOVAL STRCT	1	-1 L		4
[illegible]	UNNAMED	CLAYTON	P 1849	AVG	N	REMOVAL STRCT	0	-1 L		4
[illegible]	UNNAMED	CLAYTON	1849-1868	AVG	N	REMOVAL STRCT	0	-1 L		4
[illegible]	UNNAMED	CLAYTON	1849-1868	AVG	N	REMOVAL STRCT	0	-1 L		4
[illegible]	UNNAMED	CLAYTON	1868-1893	AVG	N	REMOVAL STRCT	0	0 M		4
[illegible]	UNNAMED	CLAYTON	P 1849	AVG	N	DETERIORATED	1	1 H		1
[illegible]	UNNAMED	CLAYTON	P 1849	AVG	N	PARTIAL FLOW	4	-1 M		2
[illegible]	UNNAMED	CLAYTON	P 1849	AVG	N	UNDISTURBED	0	2 M		2
[illegible]	UNNAMED	CLAYTON	1849-1868	AVG	N	UNDISTURBED	0	-1 H		1
[illegible]	UNNAMED	CLAYTON	P 1849	POOR	N	UNDISTURBED	0	-1 H		1
[illegible]	UNNAMED	CLAYTON	P 1849	AVG	N	UNDISTURBED	0	-1 H		1
[illegible]	UNNAMED	CLAYTON	1849-1868	AVG	N	UNDISTURBED	4	-1 H		1
[illegible]	UNNAMED	CLAYTON	1868-1893	AVG	N	UNDISTURBED	4	-1 H		1
[illegible]	UNNAMED	CLAYTON	1849-1868	AVG	N	REMOVAL STRCT	0	-1 L		4
[illegible]	UNNAMED	CLAYTON	1849-1868	AVG	N	REMOVAL STRCT	0	0 L		4
[illegible]	UNNAMED	CLAYTON	1849-1868	AVG	N	REMOVAL STRCT	0	-1 M		3
[illegible]	UNNAMED	CLAYTON	P 1849	AVG	N	REMOVAL STRCT	0	-1 M		2
[illegible]	UNNAMED	CLAYTON	P 1849	AVG	N	LNDSCAPNG	0	-1 M		3
[illegible]	UNNAMED	CLAYTON	1849-1868	AVG	N	REMOVAL STRCT	0	1 M		4
[illegible]	UNNAMED	CLAYTON	1849-1868	AVG	N	TOTAL FLOW	0	0 L		4
[illegible]	UNNAMED	CLAYTON	1849-1868	AVG	N	UNDISTURBED	3	-1 H		2
[illegible]	UNNAMED	CLAYTON	1868-1893	AVG	N	REMOVAL STRCT	1	-1 L		3
[illegible]	UNNAMED	MIDDLETOWN	P 1849	UNTRMN	N	SOIL EROSN	3	-1 L		3
[illegible]	UNNAMED	CLAYTON	1849-1868	AVG	N	REMOVAL STRCT	0	-1 H		1
[illegible]	UNNAMED	CLAYTON	P 1849	AVG	N	TOTAL FLOW	0	0 L		4
[illegible]	UNNAMED	TAYLORS BRIDGE	1868-1893	AVG	N	REMOVAL STRCT	3	-1 M		3
[illegible]	UNNAMED	CLAYTON	1849-1868	UNTRMN	N	REMOVAL STRCT	0	0 L		4
[illegible]	UNNAMED	CLAYTON	1849-1868	UNTRMN	N	REMOVAL STRCT	0	0 L		4
[illegible]	UNNAMED	CLAYTON	P 1849	AVG	N	UNDISTURBED	2	-1 H		1
[illegible]	UNNAMED	CLAYTON	1849-1868	AVG	N	UNDISTURBED	4	1 H		1
[illegible]	UNNAMED	MIDDLETOWN	1849-1868	UNTRMN	N	UNDISTURBED				

see key on page 96 for terminology descriptions

FIGURE 35

Standing Structure Data from BAHP Files – Blackbird Area

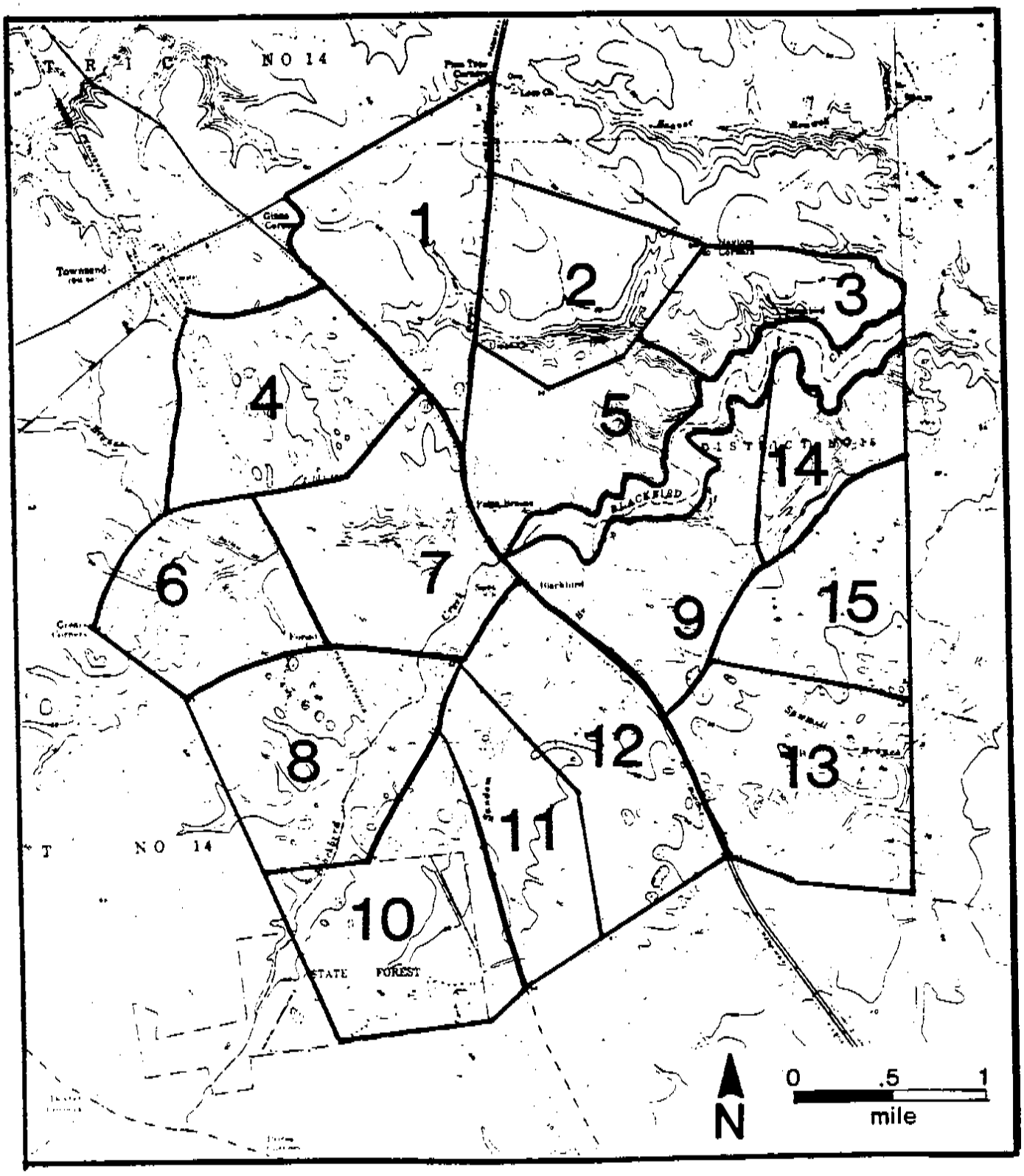
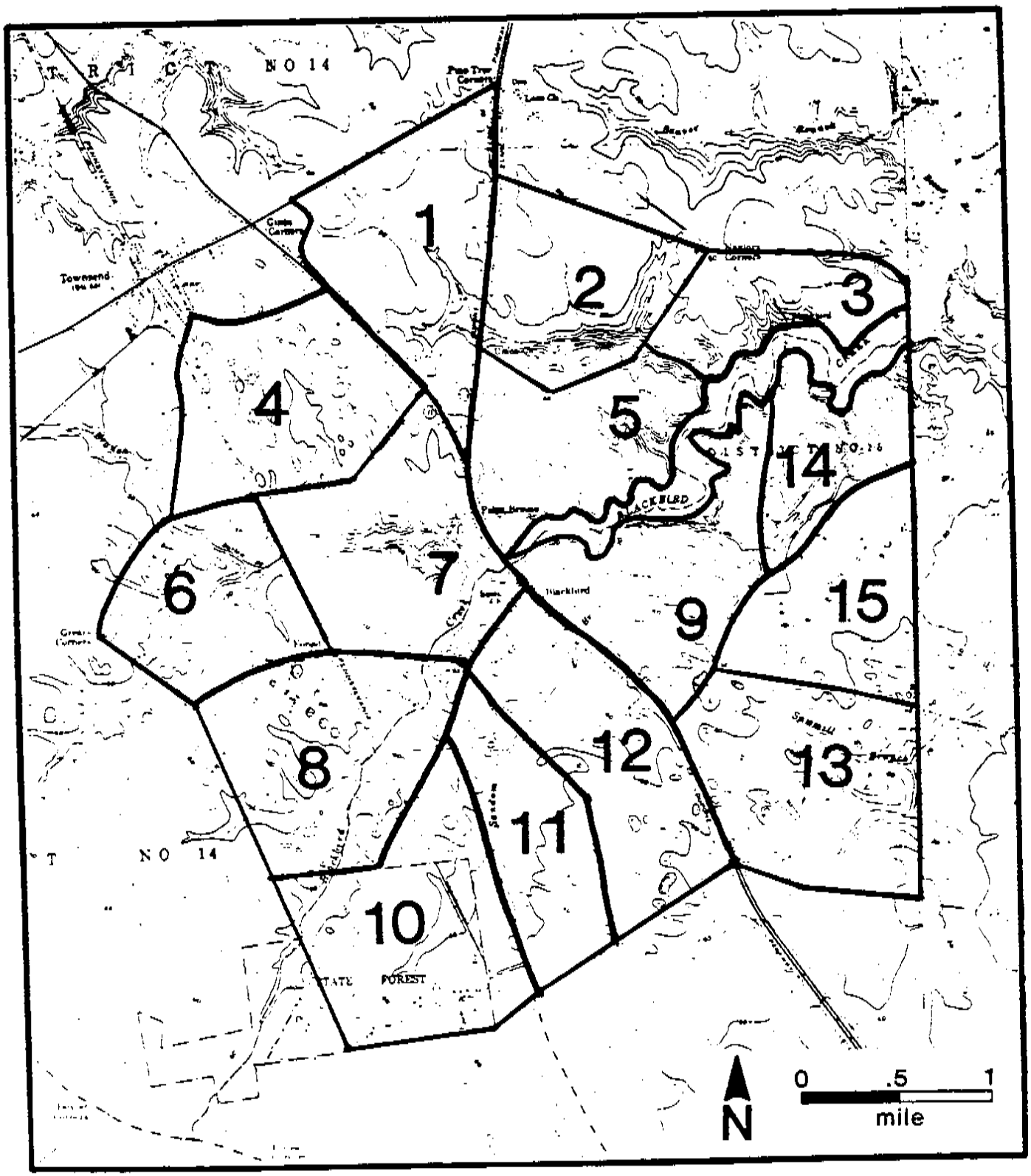


FIGURE 36

Historic Archaeological Resources Data - Blackbird Area



Subarea 3 includes a structure with a 17th century date of construction, N-3920, a dwelling just southeast of Naylors Corners. It is partially of log construction, although later additions and siding had obscured the original structure. It is the only well-documented standing 17th century structure within the area.

Apparently little is known about the history of Blackbird Landing (N-3918) and only unidentified wharf remnants remain at the location today. It should be pointed out that the potential exists for both terrestrial and underwater archaeological remains, although the present stream configuration suggests that the northern bank may have been scoured by the stream. However, recent sedimentation has probably altered the stream's course and energy level and thus it is difficult to assess the potential for archaeological remains.

The historic black community along Rt. 71 below Ginns Corner, known locally as "New Discovery" (Subareas 1, 4, and 6) holds considerable promise for the study of a rural ethnic agrarian population spanning a time from the late 19th century to the present.

The small hamlet of "Forest" (formerly Blackbird Station) at the intersection of the present Conrail tracks and Blackbird Station Road, contains a former railroad station (N5848), a former hotel for railroad passengers (N5849), and several dwellings, all dating from the 19th century. Although the specific functions through time for all of these structures is still unknown, it is likely that this junction superseded Blackbird Landing as a transshipment center and thus was important to the local economy of the 19th and 20th centuries.

Nearby, also in Subarea 7, is a pre-1849 farmhouse on the south side of Barlow Branch (N5854). Several original outbuildings remain and the entire complex is quite isolated and appears remarkably undisturbed. Thus the potential for pre-1849 archaeological remains is very high. The potential for intact subsurface features is also high for N-5938 (Plate 16), another pre-1849 agricultural complex in Subarea 7.

East of Blackbird Station is the mill complex and associated hamlet at the junction of Blackbird Station Road and Blackbird Creek. Only the fieldstone foundation (#294, Plate 17) remains of the mill, but the mill owners house (#794) and several other 19th century dwellings remain. Also in the immediate vicinity is the former site of an industrial tenants dwelling (#387).

The farmhouse north of Rd. 472 (N-131) in Subarea 8 is noteworthy because its building material is unusual for this area. The walls of the main part of the house are fieldstone, while the overwhelming majority of structures in this area are of brick or frame. The stones were almost certainly imported from some distance and suggest an added investment by the builder or owner in time or money.

PLATE 16

Structure N-5938, Northwest Face of House

PLATE 17

Archaeological Site #294, Foundation Associated with pre-1849 Mill Complex Looking Southwest from Road 463

When the original Rt. 13 was constructed some sixty years ago, the construction generally followed existing thoroughfares through this area. However, some older sections were bypassed. One of these older sections near Blackbird is still intact and contains an arched ashlar masonry bridge with an intact deck. It is no longer used for vehicular traffic.

In sum, it can be noted that the impact of farming on historic archaeological sites in the project area has been quite pronounced. Nonetheless, many significant archaeological resources are still present.

ANALYSIS OF PREHISTORIC SITE SURVEY RESULTS

This section of the report will describe various analyses of the results of the prehistoric site survey. The first analysis described is a comparison of the predictive model's expected results and the observed results of the field survey. The goal of this analysis was to provide an evaluation of the prehistoric predictive model. Other analyses sought to provide a broader cultural perspective for survey results and consisted of: 1) a general analysis of locational variables; 2) a factor analysis of site location variables; 3) a statistical analysis of site characteristics; and, 4) a discussion of human utilization of bay/basin features. All of these analyses include comparisons to other survey results from the Middle Atlantic region. Special comparisons with data from controlled survey results from the High Coastal Plain region of the Patuxent drainage of Maryland (Steponaitis 1980; 1983a; 1983b; 1984) will also be included due to the Patuxent region's environmental similarities to the Route 13 High Coastal Plain setting. Finally, a general discussion of the survey results for each of the major time periods is included.

EVALUATION OF PREHISTORIC PREDICTIVE MODEL

The following provides a discussion of the relationship between the present survey's results and the prediction of prehistoric site locations provided in the original Route 13 Project Planning report (Custer et al. 1984: 76-90; Attachment V). Although the predictive model derived from logistical regression analysis of LANDSAT data has been successfully tested, in a preliminary manner, in southern and central Kent County (Eveleigh, et al. 1983; Custer, et al. n.d.; Eveleigh 1984), and although a similar logistical regression model was successfully tested in south central New Castle County (Wells, et al. 1981; Wells 1981), continued testing, and subsequent refinement, of predictive models is always desirable. Therefore, the survey results of this project were used to test the local predictions generated from the logistical regression analysis. Special consideration of testing of the predictive model's results is also presented here because several recent articles (Berry 1984; Tainter 1984) have questioned the use of predictive models derived from multivariate statistical analyses of site locations,